1985

Determinants of Bid Premiums in Mergers: Information or Wealth Transfer Effects?

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The Louisiana State University and Agricultural and Mechanical Col. PH.D. 1985

DETERMINANTS OF BID PREMIUMS IN MERGERS: INFORMATION OR WEALTH TRANSFER EFFECTS?

A Dissertation

Submitted to the Graduate Faculty of the
Louisiana State University and
Agricultural and Mechanical College
in partial fulfillment of the
requirements for the degree of
Doctor of Philosophy

in

The Interdepartmental Program of Finance

by
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May 1985

ACKNOWLEDGEMENT

The successful completion of this dissertation would not have been possible without the help of a number of people. Among them, I want to express my truthful gratitude to Dr. James W. Wansley, who has served as my committee chairman, and to Dr. William R. Lane. Their advise, guidance, assistance and patience have been outstanding. I also want to extend my thanks to Dr. David M. Cordell for his assistance and encouragement. The suggestions of the other members of my committee greatly improved the quality of this dissertation. My gratitude also goes to them: Dr. Thomas R. Beard, Professor of Economics and Dr. C. F. Sirmans, Professor of Finance.

I would like to thank the chairman of the Finance Department, Dr. David T. Crary, Dr. Edward C. Blomeyer, Dr. John Caks, Dr. William F. Staats and Dr. Paul Allen for their great help. My sincere thanks also goes to Mrs. Brenda Gatlin who has skillfully and professionally typed this dissertation. I also highly acknowledge the Finance Department for offering me a graduate assistantship.

Furthermore, my greatest thanks go to my parents, my wife and my children--Shadi, Fawzy, Arafat, Khadir and Fady for their encouragement, sacrifices and patience.

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ABSTRACT

Although empirical evidence consistently finds large premiums paid to target firms in acquisitions, the evidence concerning the acquiring firm is mixed. Some studies show that acquiring stockholders earn a significantly positive excess return, others find that the returns are negative, and still others conclude that acquiring stockholders earn normal returns like any other investment. There is limited evidence concerning the impact of mergers on bondholders of the participating firms. Asquith and Kim (1982) indicate that bondholders of the merging firms neither gain nor lose from mergers, while Settle et al. (1984) finds evidence that bondholders gain from mergers. Thus, while there are four separate classes of securityholders involved in mergers (1,2) stockholders of the target and bidder firms, respectively, and (3,4) bondholders of the target and bidder firms, respectively, there is only a consensus regarding the stockholders of the target firms.

This study has two major purposes: (a) to re-examine the returns to the four classes of securityholders around the announcement of completed mergers and (b) to attempt to identify the sources of gains or losses to each group of securityholders. The first part of the study is accomplished by examining returns to both stockholders and bondholders around the announcement date of merger. The market model is employed for stock returns analysis and the mean adjusted returns approach is used in examining bond returns. The sample consists of 579

acquiring and 361 acquired firms for stock returns analysis and 64 and 29 bonds for the bidder and target firms, respectively. These firms were involved in a merger that took place between June 196[illegible] and December 1982. The second part of the study involves the estimation of a cross-sectional regression model for each of the four groups of securityholders involved in the mergers in the sample. For the cross-sectional analysis, we require data on both the acquiring and the target firms, and thus the sample is reduced to 204 target and bidder firms for which information is available. The excess returns is used as independent variable, while the independent variables used in the regression analysis are: relative price-earning ratio, relative market to book value ratio, relative size, relative variance, relative debt equity ratio, method of payment, merger type and regulation.

Results from part (a) of the study are, in general, consistent with past research. For the equity sample, shareholders of both target and bidder gain. For the bond sample, bondholders of the bidder firms gain small, but significant excess returns, while the bondholders of the target firms do not gain from merger. The cross-sectional model to target firm's stockholders indicates that relative variability, method of payment and type of merger have a positive sign and are significant variables in explaining the excess returns to target stockholders, while relative Tobin's Q-ratio is significant and has a negative sign. The model has r-square of 21.34 percent and F-value of 6.61. The model to bidding firm's stockholders show that relative size and merger type are

significant and positively related to the excess returns, while regulation is significant and has a negative sign. The model has r-square of 12.31 percent and F-value of 3.42.

The cross-sectional model to target bondholders indicate that the relative variance, relative price-earning ratio and relative debt equity ratio are significant and positively related to the excess returns to target bondholders, while the model for bidding firms bondholders indicate that relative variance and relative debt-equity ratio variables are significant.

CHAPTER 1

INTRODUCTION AND OBJECTIVES OF THE STUDY

Numerous studies have been carried out to estimate the effect of a merger on the stock price of acquiring and acquired firms during the announcement period surrounding a merger proposal. Recent empirical studies, for example, Asquith (1983), Dodd (1980), Eckbo (1983), Asquith, Bruner and Mullins (1983) and Malatesta (1983), provide evidence which indicates that acquired firms earn significantly positive abnormal returns on the merger announcement through the effective date of merger. The evidence concerning the acquiring firms is mixed: some studies, for example, Bradley (1980), Ellert (1976) and Asquith, Bruner and Mullins (1983), show that the acquiring stockholders earn significantly positive returns, while others, Dodd (1980), indicate that the returns are negative. Still yet, other studies, Asquith and Kim (1982) and Mandelker (1974), conclude that the acquiring stockholder's earn normal returns like any other investments. Although these empirical findings provide extensive evidence regarding the effect of mergers on the stockholders of the acquiring and acquired firms, they still have not answered many important questions related to the impact of merger.

First: What is the effect of merger on other security holders, namely the bondholder of both the acquiring and the acquired firms?

This is one of the many questions that will have to be answered. Despite the fact that bonds represent a large segment of the security market, and that bonds are an important part of the portfolio of many institutional firms, there are few studies in the literature which examine the bond market response to merger announcements. There is only one study (Asquith and Kim (1982)) which considers the effect of merger on stockholders and bondholders of the merging firm and another published study (Kim and McConnell (1977)) which considers only the bondholder's return without including stockholder's return.

The scarcity of empirical research concerning the bond market may be due to many reasons, among them:

1. The difficulty of collecting bond prices, since daily or monthly bond prices or bond returns are not available on tapes like stock prices and stock returns.
2. Many bonds are not traded continuously like stocks, which makes it difficult to compute the return on the bonds, and also makes it difficult to get a large sample of bonds.
3. Methodological difficulty, since bond returns could be related to many indices (bond index, stock index, treasury bill index), and it is difficult to specify which market index or combination of indices should be used.

The evidence concerning the impact of merger on the merging firm seems to indicate that corporate takeovers generate significant positive gains, that acquired firm shareholders benefit, and that acquiring firm shareholders do not lose. The sources of gain to the merging firms have been explained by different hypotheses. One source

of gain is from operating synergies which include economies of scale, attainment of monopoly or economic power that stems from bigness, efficient utilization of human and physical resources. Another source of gain is from financial synergies which include financial leverage, tax consideration, undervalued securities, diversification, improvement of the marketability of stocks and reduction in business risk. If a merger produces the above benefits which will affect the value of the firm, then we have to expect to find the same gain to be to the bondholder of the merging firms. This argument can be explained in the context of the option pricing model (OPM), where equity can be viewed as an option on the value of the firm. This option is a positive function of the firm's market value. The market value of the debt is also a positive function of the value of the firm; thus, any increase in the firm's value will be accompanied by an increase in the market value of the stocks and bonds, but with different magnitude. Given that the OPM is correct, this means that the bond market value is an increasing function of the firm's value, but it increases with a decreasing rate, and the second derivative is negative. This is because the premium (which is the option price minus the intrinsic value) of an in-the-money option is smaller than of an out-of-the-money option, thus for the same change in market value, bond prices will drop by more than they would rise, while the opposite is true for stock prices.

Second: The second question to be addressed is whether the gains from merger are generated at the expense of the bondholder? This possibility implies that the stockholder's positive abnormal

returns may simply reflect negative abnormal returns to bondholders, or wealth transfer, which arises as a result of conflict of interest between bondholders and stockholders. The nature of this conflict has been discussed by Black and Scholes (1973), Fama and Miller (1972), Galai and Masulis (1976), Jensen and Meckling (1976), Kalay (1982) and Smith and Warner (1979). Mainly two different approaches try to explain the redistribution of wealth. Jensen and Meckling (1976) argue that the acquiring firms stockholders have the incentive to acquire firms with high variability to increase the variability of their cash flow. The stockholders will gain from the merger while the bondholders lose because of the increase in the default risk of the existing bonds. Kim and McConnell (1977), Galai and Masulis (1976) and Higgins and Schall (1975) argue that merger will produce a wealth transfer from the stockholders to the bondholders, since the bondholders will receive more protection as a result of merger.

Third: Another question that we will attempt to answer is what is the determinants of merger gains as explained by different hypotheses? While previous empirical studies concluded that, on the average, merger produces upward revaluation of the acquired firms share price, and little if any gain to the acquiring firm share price, these studies do not distinguish between alternative sources of gains and the empirical evidence regarding this question is limited. Eckbo (1983) and Stillman (1983) found evidence which is inconsistent with the market power hypothesis. Walking and Edminster (1985) and Papaioannou (1984) found that the leverage, valuation ratio, asset turnover ratio, cash flow variability and the relative asset size are

significant variables in explaining the gain to the acquired firms. Asquith, Bruner and Mullins (1983) found the relative size, regulation and the outcome of the merger proposal are significant variables to explain the excess return before the announcement. In this study we will try to approximate each hypotheses by a proxy in order to explain the relevant factors that may explain the abnormal return to securityholders, and to examine the leverage effect hypothesis, price-earning ratio hypothesis, undervaluation hypothesis and relative size and relative variance.

Another debate in merger literature is whether mergers increase the market value of the firm as a result of financial synergies. Myers (1968), Schall (1972) and Rubinstein (1973) contend that in the absence of real synergies, and in a perfect capital market, there are no financial synergies from merger. On the other hand, Lewellen (1971) and Lee and Baker (1977) argue that financial synergies, which include a reduction in the expected cost of bankruptcy, reduction in the agency cost and a reduction in corporate taxes, will be created by merger if there are imperfections in the capital markets. The empirical evidence concerning that is mixed. Elgers and Clark (1980) found that shareholders of both acquiring and acquired firms gain more from conglomerate than from non-conglomerate merger, while Wansley, Lane and Yang (1983) found that there is no significant difference between conglomerate versus non-conglomerate for the acquired firm. In fact it is difficult to be certain that any class of merger has no operating synergies, but since the third class

of conglomerate, which involves a consolidation of two unrelated firms, contains the minimum operating synergies relative to the other, this class will be examined relative to other classes to examine whether merger produce financial synergies or not.

The method of payment is thought to have a significant impact on the gain to merging firm securityholders. Gordon and Yagil (1981) and Wansley, Lane and Yang (1983a, 1983b) found that cash merger are associated with higher excess return than any other types of payment. The regulation effects are also among the variables which have negative impact on the return to the acquiring firm and positive impact on the return to the acquired firm. Jarrell and Bradley (1980) and Schipper and Thompson (1983) both examined the impact of regulation on the return to securityholders of the merging firms. All of the above mentioned variables will be included to explain the determinants of excess return to the merging firms securityholders.

Objective of the Study

In this study we will consider the impact of merger announcement on the return of both bondholders and stockholders on a daily basis for all types of merger. In the literature only few studies, Asquith and Kim (1982) and Kim and McConnell (1977), examined the bondholders return around the effective date of merger.

This study will also consider the impact of other factors (i.e., method of payment, type of merger, size, regulation, etc.) on the return to bondholders and the determinants of the excess return to

securityholders. The main objectives of this study can be summarized by the following points:

1. To examine the impact of merger on the bondholders return around merger announcement to see if the bondholders gain or loss from merger.
2. To examine the information content of the merger announcement hypotheses versus the wealth distribution hypotheses, and determine the direction, if any, of the wealth transfer and whether it is due to an incentive or diversification effect.
3. To examine the determinants of the excess return to security holders as explained by different hypotheses, to provide the evidence about the variable(s) which explain the abnormal return.

CHAPTER 2

STATING THE HYPOTHESES

This chapter will state the hypotheses that will be examined, which includes the information content hypotheses, redistribution of wealth hypotheses and the hypotheses concerning the motives behind merger and the theoretical foundation of including each variable in the cross-sectional equation to explain the excess return to securityholders.

A. The Information Content Hypotheses

Capital markets are efficient when the stock prices adjust instantaneously to new information. Thus bond and stock prices provide unbiased signals for efficient allocation of resources. This implies that if the capital market is efficient with respect to merger announcement, then any information should be reflected instantaneously in the corresponding bond and stock prices.

The information content hypotheses states that the information about the forthcoming merger is considered and interpreted as good news by the stockholders of the acquiring and acquired firms. The stockholders of the acquiring firm interpret the merger announcement as good news because of their expectation of the operating and/or financial synergies for mergers. The operating synergies include opportunities for economic of scale, enhancement of the competitive sales through monopoly power, complementarity in research, physical and human

resources, managerial and administrative efficiency, and reduction of business risks. Financial synergies may include the diversification effect and increase in the debt capacity. Thus the information content hypotheses expects that the return to stockholders of the acquiring firm will be positive due to their expectation of the operating and financial synergies, and the null hypotheses will be:

H_0: the returns to stockholders of the acquiring firms will not be affected by merger, against the alternative hypothesis.

The stockholders of the acquired firm will also interpret the announcements as good news. This is because the premium they will receive (as inducement for them to sell their holdings or in exchange for the high growth or unused opportunities) should be dependent on the magnitude of the expected operating and financial synergestic benefits from merger. Thus the information content hypotheses predicts that the acquired firms stockholders' return will be positive and the null hypotheses will be:

H_0: The return to the target stockholders will not be affected by merger announcement against the alternative.

The bondholders of the acquiring and the acquired firm view the merger announcement as good news. This is better explained in the framework of the option pricing model. Black and Scholes (1973) and Galai and Masulis (1976) view the equity as an option on the value of the firm. The value of equity is a positive function of the value of the firm. Thus any increases in the market value of the firm due to the merger will cause an increase in the market value of the debt, but with a different magnitude than the stock. In fact, three possible reactions of the bond returns are possible.

1. Bond prices could fully and instantaneously reflect all of the information which is contained in the merger announcement, which implies that the bond market is efficient.

2. Bond prices respond to the merger announcement in a gradual way which implies bond market inefficiency.

3. Bond prices may not react to the merger announcement, which means that the information contained in the merger announcement is not relevant to bondholders.

But the bondholders of the merging firms, due to their expectation of the operating and financial synergies from the merger (which increases the value of the firm) and due to the functional relationship between the market value of the debt and the value of the firm, will be affected positively as the information content hypotheses implies. The null hypotheses with respect to acquiring firm bondholders is

H_0: Return to acquiring firms bondholders will not be affected by merger announcements, against the alternative.

The null hypotheses to acquired firm bondholders will be:

H_0: Return to acquired firms bondholders will not be affected by merger announcement, against the alternative.

B. Wealth Transfer Hypotheses

The wealth transfer hypotheses stems from the conflict of interest between bondholders and stockholders. It implies that an increase (decrease) in the equity market value is accompanied by decrease (increase) in the debt market value.

Kim and McConnell (1977), Galai and Masulis (1976), and Higgins and Schall (1975) argue that a merger will reduce the risk of default of the merging firms if the cash flow of the two firms are less than perfectly correlated. Because the equity value can be viewed as an option on the market value of the debt, by lowering the variance of the equity through

merger, the option value will decrease. According to the option pricing model, the market value of the stock will decrease while the market value of the bond will increase, since the bondholders receive more protection and the stockholders are hurt because their limited liability is weakened. This means that mergers have a diversification effect and this effect creates wealth transfers from stockholders to bondholders.

Jensen and Meckling (1976) argue that it is impossible for the bondholders to be completely protected from the actions of management, and it is impossible to specify all the conditions under which they need protection. The management has the incentive to expropriate the bondholders by undertaking investment projects, or acquiring firms, which increases the variability of their firms cash flow. This implies that the equity holders may earn positive abnormal returns at the expense of bondholders by increasing the riskness of their firms through merger. This is termed the incentive effect.

Galai and Masulis (1976), Higgins and Schall (1975) and Kim and McConnell (1977) assert that the stockholders of the acquiring firm can protect themselves, in the sense that they can offset the decrease in their return by retiring all existing debts at their pre-merger market price and issuing instead new bonds at the price which is prevailing after the merger. Alternatively, the stockholders can protect themselves by increasing their use of financial leverage to the point where the advantages to bondholders are offset by the disadvantages of increasing the risk of default, and the wealth transfer is cancelled.

Smith and Warner (1979) suggest that bondholders are also able to protect themselves by including protective convenants that restrict

merger activity, or covenants that allow merger only if the net tangible assets of the firm after merger meet a certain dollar minimum or at least a certain fraction of long term debt. The merger can also be made contingent upon the absence of default of any indenture provision after the transactions are completed. Thus the wealth transfer hypotheses predicts two types of behavior: the diversification effect and the incentive effect.

Due to the diversification effect, the bondholders will be affected positively while the stockholders will be affected negatively. Due to the incentive effect, the stockholders return will increase while the bondholders return will decrease. A summary of the predicted response of each security holder for the acquiring and the acquired firm for both the information content hypotheses and the wealth transfer hypotheses is given in Table 2-1.

C. Merger Motives Hypotheses

The empirical evidence on the impact of mergers on the security holders return show that the shareholders of the acquired firms earn significant abnormal return while the shareholders of the acquiring firms earn normal return. This gain has been explained by different theoretical hypotheses and empirically tested by different studies. Eckbo (1983) examined the effect of regulation on both acquiring and acquired firms stockholders, Asquith, Bruner and Mullins (1983) find that the size, regulation and the capitalization is a significant factor to explain the excess returns to merging firms stockholders, Walking and Edmister (1985) and Papaioannou (1984) find that leverage, size and

Table 2.1. Merger announcement effects on security prices as predicted by two alternative hypotheses

Hypothesis	Predicted impact on bondholders returns		Predicted impact on stockholders returns		Predicted impact on total value of the firm
	Acquiring firms	Acquired firms	Acquiring firms	Acquired firms	
Information Content Hypotheses	Positive	Positive	Positive	Positive	Positive
Wealth Transfer Hypotheses					
Diversification effect	Positive	Positive	Negative	Negative	No Change
Incentive effect	Negative	Negative	Positive	Positive	No Change

valuation are significant factors in explaining the excess returns to acquired firms stockholders. These studies used different methodologies, different variables and different merger types. In this section we will look at different hypotheses which explain the motives behind merger, and we will approximate each one by a proxy or variable to be included in the cross-sectional equation. We will also include some control variables to capture the impact of different characteristics of each security.

C.1 Price-Earnings Ratio Hypotheses

Lintner (1971) suggested that when the acquiring firm acquires a firm with a lower price earnings ratio (PER) than its own, then the market will evaluate the combined earnings of the two firms at a higher PER than that of the acquiring firm. (The market does not evaluate the two ratios as a weighted average.) The increase in earnings per share from PER differences will tend to raise the stockholders assessments of the future earnings, and this will lead to an increase in the market value of both firms securities.

It is important to mention that this argument implies that the shareholders are misled by manipulation of the accounting numbers so that the merger announcement is followed by an increase in the stock prices of the merging firms, which implies also that the capital markets are inefficient. Also, it is possible that the PER could be a proxy of size. Reinganum (1981) found that the PER effect disappears when he controls for the size, but the size effect is still significant when he controls for the PER. This implies that the PER is a proxy of size and

not vice versa. Both the relative size and the relative PER will be included as variables in our model.

If the capital market is efficient, then the relative price earning ratio (RPER) must have no value or no explanatory power, but if the acquiring firms use this ratio as the criteria for their acquisition, then this variable may have explanatory power. The increase in earnings per share from PER differences will tend to raise the stockholders assessments of the future earnings, and this will lead to an increase in the market value of bidder firms stockholders, which implies that the relative PER of the target to bidder is positively related to the excess returns of acquired firms stockholders and positively related to excess returns of acquiring firms stockholders. The predicted impact of relative price earning rations on merging firms security holders are summarized in Table 2.2.

C.2 Undervaluation Hypotheses

A company may be undervalued for a number of reasons. One is because the management is not operating the company to its potential, which is one aspect of inefficient management. Another reasons is that the bidders have inside information which the general market does not have.

Another aspect of the undervaluation hypotheses is that bidders, if they wish to obtain or add to capacity in producing a particular product, can acquire the additional capacity more cheaply by buying a company that produces the products rather than producing the same products by their own.

As a proxy for undervaluation hypotheses we will use the relative Tobin's Q-ratio of the target to bidders. The Tobin's Q-ratio is the ratio of the market value of the firm in relation to the replacement costs of the assets represented by these shares. The relative Tobin's Q-ratio is defined as

$$\text{RTQR} = \frac{\text{(Market value of Equity/Book Value of Equity) to Target}}{\text{(Market value of Equity/Book Value of Equity) to Bidder}}$$

A Q-ratio less than one to the target implies that acquiring firm can find the additional capacity it needs more cheaply by acquiring that target. The argument of this hypotheses implies that the lower the market to book value of the target, the higher the expected returns to the bidder, which means that there is inverse relationship between (RTQR) and the excess return to bidders, and because the size of the premium paid to the target is a function of the expected benefits from merger, we expect to find this variable positively related to the excess returns of the target firms.

If the capital markets are efficient, this ratio have no explanatory power unless the acquiring firms have inside information about the acquired firm. The predicted effects of the undervaluation hypothesis are summarized in Table 2-2.

C.3 Leverage Effect Hypotheses

There are two sources of gain through leverage from merger. Lintner (1971) concluded that given the assumption that the merging firms already have optimal debt equity ratios in their capital structure, merger will reduce the borrowing costs as a result of increasing the size.

> Large firms can thus refinance debt of small independent firms at lower economic cost, resulting in a genuine capital gain through merger (Lintner, 1970, p. 107).

The second source of gain through leverage has been pointed out by Lewellen (1971) and Levy and Sarnat (1970). They argue that joining together less than perfectly correlated income streams through merger will reduce the lenders risk, which implies an increase in debt capacity at the same risk. This will lead to an increase in the market value of securities of the merging firms.

Shastri (1982) derived a valuation equation of debt and equity of the merging firms in which he allowed the acquiring and the acquired firms to have different variances, different debt equity ratios and different debt maturities. Concerning the leverage effect, his argument implies the following:

Let DER_B = Debt equity ratio of the acquiring firm

DER_T = Debt equity ratio of the acquired firm

then we have the following possibilities of debt equity ratio, combined with their effect on security holders of both firms.

Possible DER Combination from Merger	Acquiring Bondholders	Acquired Bondholders	Acquiring Stockholders	Acquired Stockholders
$DER_B > DER_T$	Positive	Negative	Positive or Negative	Positive or Negative
$DER_B < DER_T$	Negative	Positive	Positive or Negative	Positive or Negative

If $DER_B > DER_T$, then the merger will produce a leverage ratio which is greater than DER_T and less than DER_B. As a result the bondholders of the acquired firm will experience a higher risk of default and the market value of their bonds will go down, while the bonds of the acquiring firm will increase in market value. Shastri (1982) argues that the effect is always negative for the combined common stock and that the effect on each individual stock would depend on the terms of the merger. The predicted impact of the leverage hypotheses on security holders of the merging firms is summarized in Table 2-2.

C.4 Size Effect Hypotheses

The empirical evidence indicates that there is a relationship between abnormal returns and size. Reinganum (1981) found that small firms earn more than the large firms, and he concluded that the Capital Asset Pricing Model is misspecified due to the omission of significant anomalies. Banz (1981) also found that smaller firms have higher risk adjusted returns, on the average, than larger firms. He suggested that the size effect may be used as the basis for a theory of mergers where large firms are able to pay a premium for the stock of small firms since they will be able to discount the same cash flows at a smaller discount rate. The relative size variable will be included to reflect the acquiring firms management preference of acquiring firms that are relatively large compared to themselves, or what is called managerialism. The predicted impact of the size effect is included in Table 2.2.

C.5 Variance Effect Hypotheses

Different authors have different views about the variance effect. Jensen and Meckling (1976) argue that acquiring firms have the incentive to acquire investment projects or targets with high variability to create a wealth transfer from the bondholders to stockholders. Galai and Masulis (1976) contend that in the absence of protective convenants, and when the returns to merging firms are less than perfectly correlated, the variance of the acquiring firm will decrease by merger, causing the value of the stock to decrease and the value of the bonds to increase by merger. Shastri (1982) allowed the merging firms to have different variances, so that the combined variance may be less or greater than the variance of the individual firms. The following combinations could result:

Let VAR_{bb} = The variance of the acquiring firm before the merger

VAR_{ba} = The variance of the acquiring firm after the merger

VAR_{t} = The variance of the acquired firm before the merger

Variance Combination	Acquired Bondholders	Acquiring Bondholders	Acquired Stockholders	Acquiring Stockholders
$VAR_{bb}, VAR_{t} > VAR_{ba}$	positive	positive	negative	negative
$VAR_{t} > VAR_{ba} > VAR_{bb}$	positive	negative	negative	positive
$VAR_{t} < VAR_{ba} < VAR_{bb}$	negative	positive	positive	negative

In the first case the combined variance is less than the variance of either firm, so the bondholders of both firms will be better off. The second case implies that the combined variance may be greater than one of the firms and lower than the other.

The variance effect could also reflect management's action to maximize the value of their firm by acquiring target firms with lower variance to reduce the variability of their firms, which will effect the security holders of both firms positively. The relative variability will be included as a proxy to capture the variance effect, and the predicted sign of the effect is summarized in Table 2.2.

C.6 Method of Payment Effect

The form of payment is thought to have a significant impact on both the acquiring firms gain from merger and the premium paid to the target firm's security holders, in which cash mergers are associated with higher excess return than other forms of payments like exchange of securities. Wansley, Lane and Yang (1983) studied different explanations concerning this effect, and concluded that the stockholders of the acquired firm will require higher premiums in case of cash merger since they will pay a capital gain tax in the merger year, and because they will give up the expected benefit from merger.

Another aspect of the cash merger is that such mergers are usually treated as a purchase in which the goodwill (goodwill is defined as the difference between the purchase price and the book value of the acquired firms assets), is written off against earnings after taxes, while in other types of payment, the mergers are treated as a pooling of

interest. Pooling treatment of merger implies that the income statement and the balance sheet of the merging companies are added together. Many managements prefer pooling and pay higher premiums in order to be successful in their bids and because they don't like to see the earning per share decline if they follow a purchase technique. The higher the premium the management pays, along with the higher taxes associated with pooling, the lower the cash flow to the acquiring firm and the effect on its share prices is negative. Wansley, Lane and Yang (1983) also observed that cash mergers are usually completed faster than other forms of merger, an effect which will be reflected on the excess return to acquiring firms, in the form of reduced legal and administrative costs and reduction in the number of bidders.

The empirical evidence concerning the method of payment is very limited. Gordon and Yagil (1981) found that the excess return for the acquiring firm is 7.9% for cash payments and 5.3% in security exchanges, while it is 31.9% for cash and 18.7% for security exchanges for the acquired firm. Wansley, Lane and Yang (1983, 1984) examined the abnormal returns to acquiring and acquired firms by type of merger and method of payment. They found that the cumulative average residual (CAR) is 38.68% for cash merger and 25.39% for security exchange. A significant difference was found for acquired firm, a difference attributed to tax effects, accounting effects on earnings and the shorter period in performing cash mergers.

Halpern (1983) criticized previous studies on the basis that the method of payment may be related to other factors such as the size of the acquired firm and the rate of return on the market portfolio. The

method of payment will be included as a binary variable to test the null hypotheses that there is no significant difference between cash merger and other forms of payment against the alternative. Table 2.2 indicates the predicted impact of method of payment on the securityholders of the merging firms.

C.7 Type of Merger Hypotheses

Another issue in merger literature is whether the merger produces financial or real synergies. Lewellen (1971) argued that financial benefits will result in case of imperfect capital market, and that the financial benefits are more likely to be related to conglomerate merger than non-conglomerate. Schall (1972) and Rubinstein (1973) found that in case of perfect capital market and in the absence of real synergies, merger will not affect the value of the firm.

The empirical evidence concerning types of merger is very limited. Elgers and Clark (1980) examined the effect of merger type on the stockholders of the acquired and acquiring firms, using monthly data. They found that the shareholders of the merging firms gain more from conglomerate than they gain from non-conglomerate. Wansley, Lane and Yang (1983, 1984) found that there is no significant difference between conglomerate versus non-conglomerate for acquired firms, while they found that there is a difference for the acquiring firms.

It is important to mention that previous studies about merger type suffer from the arbitrary nature of merger classification schemes, based on the Federal Trade Commission (FTC) Code, since there is no assurance that any class will not produce real synergies. The Federal Trade

Commission classified each acquisition into the following codes: 1) Horizontal: companies involved produce one or more of the same, or closely related products in the same geographic market. 2) Vertical: companies involved had a potential buyer/seller relationship prior to the merger. 3) Product extension: companies involved are functionally related in production and or distribution but sell products that do not compete directly with one another. 4) Market extension: companies involved manufacture the same products, but sell them in different markets. 5) Others: consolidation of two unrelated firms. Categories 3, 4, and 5 are considered as conglomerate merger. The third class of conglomerate which involves a consolidation of two unrelated firms will produce the minimum real synergies relative to other classes. Our null hypotheses concerning this variable is that there is no difference between a pure conglomerate merger and all other types against the alternative hypotheses. The predicted signs of this variable are summarized in Table 2.2

C.8 Regulation Effect Hypotheses

The effect of regulation is a controversial issue. The advocates of regulation argue that target shareholders need protection from undesirable mergers, and that regulation provides more information and time for shareholders to make their decisions. Those who oppose regulation argue that it will reduce the incentive to engage in acquisitions, which means that the shareholders of the acquired firm will be worse off because they will lose the benefits of merger. Also, if merger results in more efficient management of the acquired resources,

then the foregone desirable combination will impose social costs.

Jarrell and Bradley (1980) provided a theory of corporate mergers in which corporate mergers provide a market for the acquiring firms to exchange the knowledge produced by its highly skilled management. If the information produced is specific to the acquired firm, then regulation will cause a leakage of information. Jarrell and Bradley (1980) examined the effect of the Williams Amendment of 1968 on the daily return of 161 tender offers between 1962 and 1977. They found that the premium paid to unregulated targets was 32.4%. This premium was increased to 52.8% by federal regulation and to 73.1% by federal and state regulation. The percentage of acquired shares purchased also decreased. They concluded that regulation caused the purchase price of the acquired firm to increase, the return to the acquiring firm to decrease and to reduce the value and the profitability of merger. Schipper and Thompson (1983) examined the impact of the Accounting Principles Board's (APA) opinions 16 and 17, the 1969 Tax Reform Act and the Williams Amendments. They found that these regulatory changes had a significantly adverse impact on share values of acquiring firms.

The main two regulations which we will examine are the Williams Amendments of July 1968 and December 1970, and the Tax Reform Act of December 1969. The first regulation was introduced by Senator Williams to regulate the cash tender offer. While the bill has been criticized on the basis that it would raise the cost of acquisition and that it is against competition, it was passed in July 1968. The second bill, which provided more restriction on the action of the acquiring firm, was

approved and passed in December 1970. The first amendment requires the acquiring firm to:

1. File statements about the offer and their plans for the acquired firm;
2. Pay to all tenderors the highest price offered to any tenderor;
3. Allow tenderors a fixed period to withdraw tendered securities;
4. Purchase shares on a prorate basis if the numbers tendered during the first ten days exceeds the number of acquiring wishes to purchase. Also the acquired management has the right to sue to delay the tender offer.

The second amendment tightens the regulation of the first one and extends them to stocks for stock tender offers. The 1969 Tax Reform Act, presented by President Johnson in January 1969, was signed by President Nixon in December 1969. It disallows the interest deduction on convertible bonds issued to effect merger.

Previous studies provided the justification to include the regulatory changes as a factor to describe the excess return for both the acquiring and acquired firms. Since this effect will be translated into excess return to the merging firm, and while previous studies do not examine the impact of these changes on the return to bondholders of the merging firms, we will include it as a factor to describe the excess returns to the bondholders. We expect to find this factor positively related to security holders of the acquired firm and negatively related with excess returns of the acquiring security holders. Since the period after July 1968 can be described as a regulatory period following the first and second amendments and the APB's opinions approved after July 1968, one dummy variable will be included to account for these effects.

Table 2-2. The Predicted Impact of Mergers Motive Hypothesis on the Securityholders of the Merging Firms

Hypotheses to be Examined	Symbol	Acquired Firms		Acquiring Firms	
		Stockholders	Bondholders	Stockholders	Bondholders
1) Relative Price Earning Ratio	RPER	Positive	Positive	Positive	Positive
2) Relative Tobin's Q-Ratio	RTQR	Positive	Positive	Positive	Positive
3) Relative Debt-Equity Ratio	RDER				
A - Debt Capacity Effect		Positive	Positive	Positive	Positive
B - Wealth Transfer Effect:					
If $DER_B > DER_T$		Positive/ Negative	Negative	Positive/ Negative	Positive
If $DER_B < DER_T$		Positive/ Negative	Positive	Positive/ Negative	Negative
4) Relative Size	RSIZE	Positive	Positive	Negative	Negative
5) Relative Variance	RVAR				
A - Diversification		Positive	Positive	Positive	Positive
B - Wealth Transfer					
If $VAR_{bb}, VAR_t > VAR_{ba}$		Negative	Positive	Negative	Positive
If $VAR_t > VAR_{ba} > VAR_{bb}$		Negative	Positive	Positive	Negative
If $VAR_t < VAR_{ba} < VAR_{bb}$		Positive	Negative	Negative	Positive
6) Method of Payment	MPAY	Positive	--	Positive	--
7) Type of Merger	MTYP	Positive	--	Positive	--
8) Regulation	REGUL	Positive	--	Negative	--

CHAPTER 3

REVIEW OF LITERATURE

This chapter encompasses a survey of previous empirical research on the impact of merger announcements on the returns to acquiring and acquired firms. The first section of the chapter reviews the empirical work that examined the returns to stockholders of both acquiring and acquired firms around merger announcements. The second section is devoted to empirical research that examined determinants and factors which affects the excess return to stockholders of the merging firms. The third section reviews and evaluates studies that examined returns to bondholders and stockholders around merger announcements. The fourth section is devoted to past empirical research in the area of wealth transfer and informational effects. The final section is a summary of the chapter.

Gain to Stockholders of the Merging Firms

Numerous studies have estimated the effects of mergers and tender offers on stock prices of the participating firms. The previous empirical work investigates (a) the magnitude of the gains from merger to stockholders of acquiring and acquired firms; (b) whether opposition to the merger proposal by management of the acquired firms reduces the stockholders wealth; (c) the impact of regulation, which restricts the

action of the acquiring firms, on the returns to participating firms; and (d) whether mergers create a market power. These are among many questions that previous research attempted to answer.

Mandelker (1974) investigated the impact of mergers on the returns to the stockholders of the acquired and acquiring firms. The two basic assumptions examined are the perfectly competitive acquisition market hypotheses, which implies that for an acquiring firm there are no monopolistic source of gains due solely to merger. This is because competition will equate the expected rates of returns on assets of similar risk and if the acquisitions market offers higher expected returns than equivalent activities of similar risk, more resources will be directed to this activity until expected rates of return are reduced to a competitive level. The second hypotheses is the efficient capital market hypotheses with respect to information on acquisitions.

Mandelker employed the two-factor market model to generate residuals for forty-months before and after the effective month of merger. The procedure was used for both acquiring and acquired firms for the period from 1948 to 1967. His findings indicate that the stockholders of the acquiring firms earn a normal return from mergers like any other investment with the same risk level. The stockholders of acquired firms earn abnormal returns of approximately 14% on the average, in the seven months preceding the merger. He concluded that his findings are consistent with the perfectly competitive acquisitions market hypotheses and with the hypotheses that information regarding mergers is efficiently incorporated in the stock prices. These results

are also consistent with the idea that stockholders are not misled by accounting manipulations or by the artificial increase in earnings per share that results from different price-earning ratios. The positive abnormal return to the acquiring stockholders is consistent with the hypotheses that the acquiring firms operate in a perfectly competitive market, in that the prices they pay for the acquired firms enable their stockholders to earn normal returns.

Dodd (1980) examined the market reaction to the merger announcement and subsequent acceptance or rejection of merger proposals. The market model methodology was used with a sample of 151 merger proposals. Of this number, 71 were completed and 80 were cancelled after the initial announcement. He found that the stockholders of the acquired firms gain large positive abnormal returns regardless of the outcome of the proposal (whether it is accepted or rejected) and on average shareholders earn approximately 13% excess return.

For merger proposals that are completed, the acquired stockholders earn 33.96% excess returns over 10 days before through 10 days after the approval by acquired stockholders, while for merger proposals that are cancelled, the acquired stockholders earn a significant negative excess return 10 days before and 10 days after the termination day. Stockholders of the acquiring firms earn negative excess returns regardless of the outcome of the proposal. For cancelled merger proposals the returns are -7.22% while for completed merger proposals the returns total -5.5%.

Dodd (1980) observed that because the excess return to the acquired stockholders is positive irrespective of the outcome of the proposal,

this can be taken as evidence that the managers act in the interest of shareholders when they veto the proposed merger. Copeland and Weston (1983) provided an additional explanation of Dodd's findings. They suggest that the rejection of the merger proposal by the acquired firm could be taken as signal by the market that the acquiring firm has uncovered a profitable opportunity or there is a better bid, while the rejection by the acquiring firm could be considered as a signal that the acquired firm represents a bad deal and the deal does not represent a profitable opportunity.

Bradley (1980) examine the impact of cash tender offers on the return to both acquiring and acquired firms for both accepted and rejected offers. He studied a sample of 258 cash tender offers that occurred between 1962-1977. Out of these, 97 were rejected by the stockholders of the acquired firm and 161 were accepted.

Bradley (1980) finds that the acquired firms stockholders gain a significant positive abnormal return in case of successful and unsuccessful tender offers. The acquiring stockholders realize an excess return of 5%, which is consistent with a synegistic benefit from merger. In the case of an unsuccessful offer, the acquiring firms stockholders realize a negative abnormal returns which Bradley attributed to search and administrative costs of the offer.

Asquith (1983) investigates the effect of merger bids on the stock returns of both acquiring and acquired firms. Excess returns are examined throughout the entire merger process for both successful and unsuccessful merger bids. The sample of successful mergers consists of 211 acquired firms and 196 acquiring firms, while the sample of

unsuccessful mergers consists of 91 acquired firms and 89 acquiring firms. The entire sample was taken over the period of July 1962 through December 1976.

Daily excess returns are calculated using the daily CRSP excess return file. Asquith finds that in both successful and unsuccessful mergers, the acquired firm's stockholders realize positive and significant average excess returns on the press day and the day before. At the outcome date for successful mergers there are significantly positive excess returns, while for unsuccessful acquired firms, there are significantly negative excess returns. He also finds that in both successful and unsuccessful mergers, the acquiring firm's stockholders realize a small positive, but statistically insignificant, excess return at the announcement date. At the effective date, for successful mergers, the stockholders realize small positive excess returns, while for unsuccessful mergers, there are small negative excess returns, but both are statistically insignificant. During the interim period, the cumulative excess return is negative and statistically insignificant for successful mergers, while it is negative and statistically significant for unsuccessful mergers, to the bidding firm stockholders.

Asquith concludes that these results are consistent with the hypotheses that acquired firms have unique resources that provide synergy when combined with other firms.

Malatesta (1983) examines the effect of mergers on shareholder wealth. A distinctive feature of Malatesta's study is the calculation of the dollar wealth effects of mergers by the abnormal returns in addition to percentage returns. He also defines the first date as the

time when investors learn that the firm will engage in merger activity, and the second date as the resolution date. The ex post Capital Asset Pricing Model (CAPM), with the intercept allowed to vary, is used to generate the abnormal returns 24 months before and 12 months after the merger. The data included large mergers as reported by the Federal Trade Commission from 1969 to 1974. The total sample was 256 acquiring and 85 acquired firms.

Malatesta finds that the percentage returns to acquiring stockholders are insignificantly different from zero before the first date and are significantly negative after the first and second announcement dates. The dollar return for this group indicated a cumulative excess negative return of $49.3 million per firm 24 months before the second date. He also finds that acquired firms earned significantly negative returns (in terms of percentage) from 24 to 4 months before the first announcement. The returns become positive and statistically significant after the first and the second date. In terms of dollar returns, the acquired stockholders have significant positive abnormal return of $19.2 million 4 months before the second date. Malatesta's results are consistent with the hypotheses that mergers have a positive impact on acquired firm stockholders.

Asquith, Bruner and Mullins (1983) also examine the impact of merger announcement on the wealth of the acquiring firms shareholders. Their data consisted of 156 acquiring firms which initiated a merger program between 1963-1979. The daily excess returns are calculated using a technique developed by Myron Scholes (1976) for the Center for

Research in Security Prices (CRSP), and the excess returns is taken from the daily (CRSP) excess returns file.

Asquith, Bruner and Mullins examine four different hypotheses: (1) acquiring firms shareholders benefit from mergers; (2) the effect of merger announcement on the firms which initiate the merger programs should be observed early in a merger program and decrease with succeeding mergers; (3) abnormal returns to acquiring firms should reflect the relative size of the acquiring and acquired firm; and (4) the return to acquiring firm is affected by regulation. They find that the acquiring firms shareholders benefit from mergers. The average excess return was found to be 2.8%, with a t-statistic of 5.2. Larger excess returns were found when they controlled for acquired firm size and for the time period in which the bid occurred. A statistically significant relationship was found between the acquiring firms cumulative excess return and the relative size of the acquired firms equity.

The excess return for successful mergers was found to be 4% greater than unsuccessful merger bids, and the excess return prior to 1969 were 2.6% higher than the excess return after 1969. They did not find evidence to support the hypotheses that the benefits from mergers are reflected in the stock prices at the announcement of a merger program.

Studies Examining the Determinants of Excess Returns to Securityholders

In this section we will discuss the empirical work which examined other factors such as method of payment, type of merger, the regulation effect, the size effect, and how these factors affect the returns to the securityholders of the merging firms.

Wansley, Lane and Yang (1983) examined the abnormal returns to stockholders of acquired firms around the announcement day of merger. They tested for differences in return after controlling for the method of payment (cash, security or combination) and the type of merger (non-conglomerate, pure conglomerate, or other conglomerate). Their results indicate that there is no significant difference in return to acquired firms stockholders across merger types, while there is a significant difference between cash mergers and other methods of payment. This difference was attributed to the tax effect and to regulatory requirements that prefer cash as the method of payment.

Elgers and Clark (1980) examined the return to the buyer and seller firms 24 months before and after the announcement month. They also examined the differences in returns between conglomerate and non-conglomerate mergers, and between pure conglomerate and other types of conglomerate mergers. The market model was employed to estimate the excess return around the merger month for 337 mergers between 1957 and 1975. Their findings show that the acquired firm earns positively significant abnormal return around the merger month. They also found that conglomerate mergers provide higher returns to the acquiring firm; the difference is larger if the pure conglomerate mergers are isolated. Conglomerate mergers were also found to provide higher returns to acquiring firms stockholders than non-conglomerate mergers. Their evidence concerning merger types suggests that the debt capacity rationale for conglomerate merger does not distinguish between conglomerate and other merger types.

Walking and Edmister (1985) analyzed the determinates of bid premiums using 108 cash tender offers between 1972 and 1977. Their main hypotheses was that premium size measured as the percentage difference between the bid price specified in the offer and the market price 14 days prior to the earliest offer announcement is positively related to the expected benefits from merger and negatively related to the acquiring firm's bargaining power. Their model includes such variables as the trend in debt to assets ratio for the acquired firm, the trend in net working capital to assets ratio, the ratio of market to book value, the percentage of the acquired shares controlled by the acquiring firm, conglomerate versus non-conglomerate merger, and contested versus uncontested offers.

Their results indicate that higher premiums are offered for firms with declining amounts of leverage and for firms where the market to book ratio is relatively low. Other variables which turned out to be statistically significant are the variable which indicates if there is an opposing suitor at the time of a bidder's last offer revision, the variable which measures the percentage of the acquiring firm's shares controlled by the bidder prior to the offer and a variable which indicates whether the bid will give more than 50% control to the acquiring firm. The model explained over 37% of the variation in bid premiums.

Papaioannou (1984) examined empirically the merger related premiums for acquired firms in a sample of 53 pure conglomerate mergers occurring between 1964 and 1975. A number of variables was selected to test the financial and managerial synergy hypotheses and the managerial welfare maximization hypotheses. These variables included a profitability

ratio, an asset turnover ratio, a liquidity ratio, debt ratio, cash flow correlation of the target with the bidder, sales growth rate, cash flow variability, asset size relative, price earnings ratio, and the valuation ratio. The results indicate that the acquired firms seem to represent less efficiently managed firms because of their lower profitability, higher liquidity and leverage underutilization. The two other significant variables--the cash flow variability and the asset size relative--have negative and positive signs, respectively, which can be taken as evidence in support of the managerial welfare maximization hypothesis.

Jarrell and Bradley (1980) examined the effect of regulation on the returns to acquiring and acquired firms by looking closely at the impact of the Williams Amendment of 1968 on the daily returns of 161 tender offers between 1962 and 1977. They found that the premium paid to unregulated acquiring firms was 32.4%. This premium was increased to 52.8% by federal regulation and to 73% by both federal and state regulation. They conclude that regulation caused the purchase price of the acquired firm to increase, the return to the acquiring firm to decrease and a reduction in the value and profitability of mergers.

Schipper and Thompson (1983) investigated the impact of the Accounting Principles Board's opinions 16 and 17, the Tax Reform Act and the Williams Amendments. They found that these regulatory changes had a significantly adverse impact on share values of acquiring firms.

Studies Examining the Return to Bondholders Around Merger Announcement

In this section we will review and evaluate the previous empirical studies which examined the return to bondholders of the merging firms. Only one published work has examined the returns to both bondholders and stockholders, and another study has examined the return to bondholders alone.

Kim and McConnell (1977) examined whether the bondholders of merging firms earn positive abnormal returns due to mergers. They also examined the use of financial leverage by the merging firms to find out if the shareholders are able to protect themselves from a wealth transfer to bondholders by increasing the use of financial leverage. They employed a paired comparison procedure to generate abnormal return around the merger announcement month. The procedure involves a comparison of one bond issued by a nonmerging firm with each of the bonds issued by a sample of merging firms matched on different characteristics. The second methodology they used is the two-index market model, which includes the stock market index and the corporate bond index. Their data consisted of 31 observations on a monthly basis for the period between January 1960 and December 1973.

Kim and McConnell find that the bondholders of merging firms do not earn abnormal returns during the 24 months around the merger announcement; they also find that using different measures of financial leverage before and after the merger, merging firms increased the use of financial leverage after the merger took place. They argued that these results are consistent with the hypotheses that the wealth transfer from

stockholders to bondholders has been cancelled by the increased use of leverage. These findings are also consistent with the idea that managements act in the best interest of the stockholders.

While the results of Kim and McConnell (1977) are consistent with their hypothesis, their evidence can be considered suggestive at best and does not provide the basis for strong generalizations because of the following:

1. They use monthly data instead of daily data, which are not as sensitive in distinguishing changes in securityholder's wealth as are daily return.
2. They use the effective date of merger as the event date, which is not as accurate as the announcement date in analyzing the security market's reaction to mergers. Also, the time lag between the announcement date and the effective date creates noise so that the statistical test may not detect the systematic movement in the security prices, if any.
3. The paired comparison procedure creates problems which affect their results, since in many cases there was no matching. In addition, they match industrial bonds with utility bonds, which means that the average and the cumulative average difference do not reflect the impact of merger on the bond returns.
4. Using the two factor market model procedure to generate abnormal performance for bonds causes a serious problem since the assumption of equal variance, normality and no serial

correlation between the residual will not be satisfied, as indicated by Alexander (1980).

5. The sample was very small (31 bonds for both acquiring and acquired firms) and no distribution free test or non parametric test was carried out to determine the significance of their results.

Asquith and Kim (1982) examined the return to bondholders and stockholders of the merging firms. A paired comparison technique was used to generate abnormal returns around merger announcement. Their sample consisted of 28 acquiring and 22 acquired firms engaged in a pure conglomerate merger between January 1, 1980 and December 31, 1978, in which each firm had bonds outstanding. They found that the stockholders of the merging firms gained as a whole from merger implying that the synergistic benefits from merger (whether it is operating or financial) do not depend on the type of merger.

The bondholders do not earn positive or negative abnormal returns, which implies that the wealth transfer (if it occurs) could be negated by other affects of the diversification and incentive effects may cancel each other. Asquith and Kim argue that these findings are consistent with a market that efficiently resolves that conflicts of interest between stockholders and bondholders.

Their study can be criticized on the following bases:

1. The total sample of bonds for both acquiring and acquired firms (50 observations) was too small to draw any conclusions concerning bondholder returns. This sample was further

reduced to 17 observations (6 acquired and 11 acquiring firms) when they calculated the daily bond return.

2. The use of the paired comparison procedure creates a problem since 9 observations out of 17 lost their matching. This also means that the average and cumulative average differences do not capture the impact of merger announcement on bondholder returns. Additionally Asquith and Kim (1982) ran the same analyses on the bond data that are used by Kim and McConnell (1977), and they found that in many cases bondholders gain a significant return around merger announcement. Thus, while the same data set was included in their sample, they obtained different results, which makes their findings questionable.

Settle, Petry and Hsia (1984) examined the impact of merger on the return to bondholders of the merging firms. Their data consisted of 90 bonds for both acquiring and acquired firms, from 58 firms in 53 mergers between January 1961 and December 1977. They employed the mean adjusted returns to generate residuals nine months before thru nine months after the effective month of merger. They find that bondholders do gain significantly positive abnormal returns around the actual date of merger, which implies that the effective date is the relevant one to use in examining the effect of merger on securityholders.

Concerning this study, the following points must be mentioned:

1. They mixed bonds issued by the bidder and that issued by the targets even though each bondholders may have different effect as a results of merger.

2. While they examined the return to bondholders, they did not examine the corresponding return to stockholders to find out if the gain to bondholders came at the expense of other securityholders.
3. They use the effective date of merger as the event date, which is not as accurate as the announcement date in analyzing the security market's reaction to merger.

Event Studies Examining Wealth Transfer Between Bondholders and Stockholders

In this section, we will review the empirical work that examined the impact of different events (i.e., dividend announcements, exchange offer announcements, and spin off announcements) on bondholders returns and the wealth transfer hypotheses.

Masulis (1980) examined the impact of capital structure change announcements on bondholders and stockholders for the case of exchange offers. The study examined the corporate taxes, bankruptcy cost and the wealth transfer hypotheses for cases in which debt exchanged for common stock, preferred stock is exchanged for common stock and debt is exchanged for preferred stock.

Masulis (1980) argued that the exchange of debt for common stock will cause outstanding debtholders to bear an adverse redistribution of wealth because of incomplete protective covenants, while stockholders gain because a part of their junior claims are converted into senior claims of greater market value. The exchange of debt for preferred stock will cause the preferred stockholders to be better off at the expense of the outstanding debtholders. This is because preferred

stockholders are able to convert part of their lower priority holdings for higher priority debt claims.

Masulis employed comparison period returns approach to generate returns for 21 trading days around the exchange offer announcement for both convertible and non convertible bonds. His bond data included 47 convertible bonds representing 32 exchange offers and 49 non convertible bonds issues representing 26 exchange offers for the period from 1962 to 1976. He found that the portfolio daily returns of non convertible bonds experience a loss of 0.3 percent with a t-statistic equal to 3.1 for the two-day announcement period. This is consistent with Masulis' (1980) prediction of negative bankruptcy cost and redistribution effects.

Dann (1981) examined the effect of a common stock repurchase on the value of the repurchasing firm's common stock, debt and preferred stock. The comparison period return approach was applied to a sample of 41 issues of straight debt, 34 issues of convertible debt, 9 issues of straight preferred and 38 convertible preferred stocks. He examined both the information content hypotheses and the wealth transfer hypotheses. The results indicated that the combined returns for day 0 and day 1 are positive for convertible debt, straight preferred and convertible preferred, and slightly negative for straight debt. These results indicate that wealth losses for owners of senior securities arising from the repurchase of common stock by the firm is not supported. The evidence is consistent with the information content hypothesis.

Hite and Owers (1983) and Schipper and Smith (1983) investigated the effect of voluntary corporate spin-off announcements on shareholders

wealth. Hite and Owers used a variant of the comparison period return to generate excess returns from a sample of 123 spin-offs from 1963 to 1981, only 31 firms with a total of 53 publicly traded issues were found. These consisted of 15 straight bonds, 17 convertible bonds, 5 straight preferred stocks, and 16 convertible preferred stocks.

The cumulative excess return 10 days before the announcement date was found to be -0.003 with a t-statistic of -0.03, which is not significant. The excess return to other senior securities was also found to be insignificant. These findings led them to conclude that the excess return to stockholders does not come at the expense of other security-holders, evidence not consistent with the wealth transfer hypotheses.

Schipper and Smith (1983) examined bond prices and bond rating behavior around spin-off announcements to provide evidence regarding the likelihood of wealth transfer from bondholders to stockholders. For a sample of 62 spin-offs which experienced positive abnormal returns and which had 26 bonds outstanding, 13 bonds experienced price increases and 11 experienced price decreases. They also found that only 2 out of 19 bonds experienced a decline in bond rating the year after the spin-off. Schipper and Smith concluded that there is no evidence of a wealth transfer from bondholders to stockholders, which is consistent with the view that bondholders anticipate and attempt to control wealth transfers to shareholders.

Handjinicolaou and Kalay (1984) examined the impact of dividend announcement (unexpectedly high and unexpectedly low dividend changes) on both bondholders and stockholders returns of the underlying firm. Specifically, they examined both information content and wealth transfer

hypotheses. They argued that both the information content and wealth transfer hypotheses predict that stock prices will react favorably to announcement of high dividends. For bond prices the information content hypotheses predicts that bond prices will react favorably to dividend increase announcements, while the wealth transfer hypotheses predicts that bond prices will react negatively to high dividend announcements.

Handjinicolaou and Kalay employed the comparison period return methodology to estimate excess returns for period 60 days before through 15 days after the dividend announcement. Their sample consisted of 225 straight bonds traded during 1975 to 1976.

The empirical evidence indicates that the bond prices are not affected by dividend increases but react negatively to dividend decreases, which is consistent with the information content hypotheses. The gain from positive information accrues to stockholders while losses from negative information are shared by stockholders and bondholders.

Summary

While a large number of studies exist that examine returns to merging firms stockholders, these studies are different in different dimensions. Some studies used daily data while others used monthly data. Some used the announcement date as the relevant date while others used the effective date. The methodologies, time period covered, and the hypotheses examined were also different.

Despite all these differences, the evidence indicates that acquired firms stockholders in successful mergers and tender offers gain significantly positive abnormal returns on the announcement date through the

effective date, while acquired firm's stockholders, in the case of unsuccessful mergers, lose all the positive returns earned on the announcement date by the time when failure becomes known.

The acquiring firm's stockholders earn positive abnormal returns in case of successful mergers and negative abnormal returns in case of unsuccessful efforts in both mergers and tender offers.

Studies that examined the determinants of abnormal return to stockholders found that factors like the relative size of acquiring and acquired firms, debt equity ratio, valuation ratio, method of payment, and the regulation effect are significant factors in explaining the excess return to stockholders of the merging firms.

The limited number of studies which examined the return to bondholders around merger date find no evidence to support the wealth transfer hypothesis between bondholders and stockholders. It was also found that bondholders are affected little, if any, by mergers.

CHAPTER 4

DATA DESCRIPTION AND METHOD OF ANALYSIS

This study examines bond and stock price behavior around merger announcements for both acquiring and acquired firms. It also investigates the factors that may explain the excess returns to securityholders of the merging firms.

Thus, to examine the returns to stockholders of merging firms we need two samples, one for the acquiring firms and the other for acquired firms. To examine the returns to bondholders we also need two samples, one related to the bondholders of the acquiring firms and the second related to the bondholders of the acquired firms.

The cross-sectional model will include the excess return defined in two ways; the cumulative excess returns from twenty days prior to and including the announcement day and the sum of day (-1) and day zero average returns as the dependents variable and the factors which may explain the return as independent variables.

This chapter is divided into three sections. In the first section we will describe the stock data including the sample of acquiring and acquired firms. We will explain the method of analysis and the procedure used to estimate the excess return to stockholders of acquiring and acquired firms. The second section is a description of the sampling procedure of the bond samples and the methodology used to generate

excess returns to bondholders of acquiring and acquired firms. The third section is a description of the variables that are used in the cross-sectional equation and the method of analysis of these variables.

Stock Data Description

In order to construct our sample of stock returns to acquiring and acquired firms stockholders, we followed the steps outlined below.

Determining the study period. A study period from June 1962 through December 1982 was chosen. June 1962 was taken as a starting point because the data available on the CRSP--Center for Research in Security Prices--tapes begins in June 1962. December 1982 was chosen as the end of the study period because data were available on the CRSP tapes up to 1982 when the collection of data was started.

Daily returns versus monthly returns. Daily returns are used to examine the returns to securityholders of the merging firms instead of monthly returns because monthly returns are not as sensitive in distinguishing changes in shareholder's wealth as are the daily returns.

It is important to mention that the use of daily data is complicated by the fact that daily stock returns depart more from normality than do monthly returns. (See Fama, 1976.) In addition, the estimation of parameters from daily date is complicated by nonsynchronous trading, which will cause the ordinary least squares estimates of the market model parameters to be biased and inconsistent. (See Scholes and Williams, 1977.) As a consequence of nonsynchronous trading, the daily excess returns could exhibit serial dependence. Another problem is that

the variance of the stock returns increases for the days immediately around events. Brown and Warner (1980a, 1984b) investigated the event study methodologies using monthly and daily data. Concerning the problems associated with daily returns, they indicated that the degree of misspecification in the event study methodologies is sensitive to the sample size. As we increase the sample we will approach normality, and since our sample is large (361 acquired and 579 acquiring firms), we will not encounter this problem. Brown and Warner (1984b) also found that failure to take into account nonsynchronous trading in estimating the market model parameters does not result in misspecification of event study methodologies using the ordinary least squares (OLS) market model. They also found that the rejection rates using both Scholes and Williams' (1977) or Dimson's (1977) procedure are similar to the results obtained with the OLS market model, and thus there is no evidence that any procedure other than OLS will improve the specification or the power of the tests.

Announcement date versus effective date. We selected the first public announcement as mentioned in the Wall Street Journal Index to be the event date. Brown and Warner (1980), Dodd (1980) and Asquith (1983) indicate that the announcement date is the relevant date to analyze stock market reaction to mergers. The time lag between the announcement date and the effective date, which varies from one merger to another, could create noise which will cause the statistical test not to capture any existing systematic movements in the security prices.

Source of the announcement. The sample includes only completed mergers that are listed in the Federal Trade Commission as large merger

series. The effective date, method of payment and type of merger for the period between June 1962 and December 1979 was taken from the Federal Trade Commission Statistical Report on Mergers and Acquisitions. Data for the period between January 1979 and December 1982 was taken from Mergers and Acquisitions journal. Merger announcement dates were collected through the Wall Street Journal Index and both the effective date and method of payment were verified from the Wall Street Journal Index.

Obtaining the returns around announcement date. To be included in the study, both acquiring and acquired firms must have available daily returns on the CRSP daily returns file from 220 days prior to the announcement date through 20 days after the announcement date of merger. Companies that are included in this study must satisfy the following criteria:

1. The announcement date occurred between June 1962 and December 1982.
2. They are listed in the Federal Trade Commission large merger series (for the announcements between 1962 and 1979), and in Mergers and Acquisitions (for the announcements which occurred between 1979 and 1982).
3. The company must have available daily returns on the CRSP daily returns file from 220 days prior to the announcement date to 20 days after.

A total of 361 acquired, and 579 acquiring firms satisfied the previous conditions. Table 4-1 indicates the initial sample and the subsequent reasons for deletion of both acquiring and acquired firms.

Table 4-1

Initial Sample and Subsequent Reasons for Deletion:
Acquired and Acquiring Firms

Reason for Deletion	Acquired Firms	Acquiring Firms
Initial Sample	1260	1260
Company not listed on CRSP tape	720	480
Insufficient CRSP data	109	96
Bad return on the announcement day	47	63
Announcement occurred before 1962	23	42
Total number of firms deleted	899	681
Final Sample	361	579

Table 4-2 shows the frequency distribution of the acquired firms sample by the announcement year, the total sample of 361 announcement is divided by the method of payment into cash, securities and combination over a 20 year period. Table 4-3 and 4-4 indicate that 39.34% of the targets were acquired through cash, 50.69% by securities exchange and 9.97% by a combination of cash and securities. Table 4-3 also shows that after 1974, the cash as a medium of exchange increased relative to securities exchange. Table 4-5 provides a frequency distribution of the acquired firms sample by type of merger. It shows 84.51% conglomerate relative to 15.5% non-conglomerate mergers.

Table 4-6 shows the frequency distribution of 579 acquiring firms by the announcement year. Table 4-7 provides frequency distribution of the acquiring firms by method of payment. It shows that 55.78% of the sample performed by securities exchange, 35.58% by cash and 8.63 by combination. Table 4-7 shows the increasing usage of cash as medium of exchange relative to securities exchange over time. Table 4-9 provide frequency distribution of the acquiring firms sample by type of merger. The table shows that 19.34% of the acquisitions are nonconglomerate while 80.6% are conglomerate.

Table 4-2

Frequency Distribution of the Acquired Firms Sample
by Announcement Year

Year	Frequency	Cumulative Frequency	Percent	Cumulative Percent
63	7	7	1.939	1.939
64	15	22	4.155	6.094
65	22	44	6.094	12.188
66	15	59	4.155	16.343
67	38	97	10.526	26.870
68	38	135	10.526	36.396
69	10	145	2.770	40.166
70	14	159	3.878	44.044
71	7	166	1.939	45.983
72	8	164	2.216	48.199
73	13	187	3.601	51.801
74	14	201	3.878	55.679
75	13	214	3.601	59.280
76	15	229	4.155	63.435
77	26	255	7.202	70.637
78	21	276	5.817	76.454
79	16	292	4.432	80.886
80	28	320	7.756	88.643
81	27	347	7.479	96.122
82	14	361	3.878	100.000

Table 4-3

Frequency Distribution of the Acquired Firms Sample by Method of Payment and the Announcement Year

	Cash		Securities		Combination		Total	
Year	Frequency	Percent	Frequency	Percent	Frequency	Percent	Frequency	Percent
63	3	0.831	4	1.108	-	-	7	1.939
64	5	1.385	9	2.493	1	0.277	15	4.155
65	9	2.493	12	3.324	1	0.277	22	6.094
66	4	1.108	11	3.047	-	-	15	4.155
67	7	1.939	31	8.587	-	-	38	10.526
68	6	1.662	27	7.479	5	1.385	38	10.526
69	1	0.277	7	1.939	2	0.554	10	2.770
70	4	1.108	9	2.493	1	0.277	14	3.878
71	3	0.831	3	0.831	1	0.277	7	1.939
72	3	0.831	5	1.385	-	-	8	2.216
73	3	0.831	10	2.770	-	-	13	3.601
74	9	2.493	5	1.385	-	-	14	3.878
75	5	1.385	7	1.939	1	0.277	13	3.601
76	9	2.493	5	1.385	1	0.277	15	4.155
77	13	3.601	10	2.770	3	0.831	26	7.202
78	12	3.324	3	0.831	6	1.662	21	5.817
79	10	2.770	3	0.381	3	0.831	16	4.432
80	16	4.432	9	2.493	3	0.831	28	7.756
81	12	3.324	9	2.493	6	1.662	27	7.479
82	8	2.216	4	1.108	2	0.554	14	3.878
Total	143	39.334	183	50.693	36	9.972	361	100.000

Table 4-4

Frequency Distribution of the Acquired Firms Sample
by Method of Payment

Method of Payment	Frequency	Cumulative Frequency	Percent	Cumulative Percent
Cash	142	142	39.335	39.335
Securities	183	325	50.693	90.028
Combination	36	361	9.972	100.00

Table 4-5

Frequency Distribution of the Acquired Firms Sample
by Type of Merger

Type of Merger	Frequency	Cumulative Frequency	Percent	Cumulative Percent
Non conglomerate				
Horizontal	34	34	9.418	9.418
Vertical	22	56	6.094	15.512
Conglomerate				
Product Extension	164	220	45.429	60.942
Market Extension	23	243	6.371	67.313
Others	118	361	32.687	100.00

Table 4-6

Frequency Distribution of the Acquiring Firms Sample
by Announcement Year

Year	Frequency	Cumulative Frequency	Percent	Cumulative Percent
63	7	7	1.209	1.209
64	20	27	3.454	4.663
65	35	62	6.045	10.708
66	26	88	4.491	15.199
67	49	137	8.463	23.661
68	55	192	9.499	33.161
69	31	223	5.354	38.515
70	26	249	4.491	43.005
71	24	273	4.145	47.150
72	23	296	3.972	51.123
73	24	320	4.145	55.268
74	24	344	4.145	59.413
75	38	382	6.563	65.976
76	31	413	5.354	71.330
77	36	449	6.218	77.547
78	43	492	7.427	84.974
79	29	521	5.009	89.983
80	28	549	4.836	94.819
81	24	573	4.145	98.964
82	6	579	1.036	100.00

Table 4-7

Frequency Distribution of the Acquiring Firms Sample by Method of Payment and the Announcement Year

	Cash		Securities		Combination		Total	
	Frequency	Percent	Frequency	Percent	Frequency	Percent	Frequency	Percent
63	1	0.173	6	1.036	-	-	7	1.209
64	1	1.209	12	2.072	1	0.173	20	3.454
65	9	1.554	24	4.145	2	0.345	35	6.045
66	4	0.691	21	3.626	1	0.173	26	4.491
67	9	1.554	40	6.908	-	-	49	8.463
68	8	1.382	43	7.426	4	0.691	55	9.499
69	5	0.863	23	3.972	3	0.518	31	5.354
70	7	1.209	18	3.108	1	0.173	26	4.491
71	4	0.691	14	2.417	6	1.036	24	4.145
72	5	0.863	18	3.108	-	-	23	3.972
73	7	1.209	16	2.763	1	0.173	24	4.145
74	14	2.417	9	1.554	1	0.173	24	4.145
75	16	2.763	18	3.108	4	0.691	38	6.563
76	15	2.590	15	2.590	1	0.173	31	5.354
77	17	2.936	15	2.590	4	0.691	36	6.218
78	23	3.972	11	1.899	9	1.554	43	7.427
79	20	3.454	5	0.863	4	0.691	29	5.009
80	21	3.626	4	0.691	3	0.518	28	4.836
81	10	1.727	9	1.554	5	0.863	24	4.145
82	4	0.691	2	0.345	-	-	6	1.036
	206	35.579	323	55.786	50	8.636	579	100.000

Table 4-8

Frequency Distribution of the Acquiring Firms Sample
by Method of Payment

Method of Payment	Frequency	Cumulative Frequency	Percent	Cumulative Percent
Cash	206	206	35.579	35.579
Securities	323	529	55.786	91.364
Combination	50	579	8.636	100.00

Table 4-9

Frequency Distribution of the Acquiring Firms Sample
by Type of Merger

Type of Merger	Frequency	Cumulative Frequency	Percent	Cumulative Percent
Non-conglomerate				
Horizontal	72	72	12.435	12.435
Vertical	40	112	6.908	19.344
Conglomerate				
Product Extension	280	392	48.359	67.703
Market Extention	26	418	4.491	72.193
Others	161	579	27.807	100.00

Method of Analysis of the Stock Data

In order to estimate the abnormal returns associated with acquiring and acquired firms, the market model was used. This model assumes that returns generating process is given by the following:

$$\tilde{R}_{i,t} = \alpha_i + \beta_i R_{mt} + \varepsilon_{i,t} \qquad (4\text{-}1)$$

where

$\tilde{R}_{i,t}$ = the rate of return on security (i) over the period (t), which is one day

$\tilde{R}_{m,t}$ = the rate of return on the equal weighted market index;

α_i = the intercept of the linear relationship for security (i) and is given by $E(\tilde{R}_i) - \beta\ E(\tilde{R}_m)$;

β_i = the slope of the linear relationship between security (i) and the return on the market index, and is given by

$$\frac{\text{Cov}(\tilde{R}_{it}, \tilde{R}_{mt})}{\text{Var}(\tilde{R}_{mt})}$$

$\varepsilon_{i,t}$ = the unsystematic component of security i's returns at day t, which is assumed to be $N \sim (i,i,d)$ or normally, independent and identically distributed with mean equal to zero and variance equal to $\alpha^2(\varepsilon)$.

The error term, $\varepsilon_{i,t}$ can be considered as a measure of the abnormal returns of security (i) since it represents the deviation of security i's return from its expected return, given the return on the market portfolio. The estimated expected return for security (i) at time t given the realized market return is given by the following equation

$$\hat{R}_{it} = \hat{\alpha}_i + \hat{\beta}_i R_{mt} \qquad (4\text{-}2)$$

where $\hat{\alpha}$ and $\hat{\beta}$ are estimates of α_i and β_i. These estimates are obtained using 100 daily returns from day t_{-220} to day t_{-121}. The time horizon

of the announcement period includes the period from t_{-20} to t_{+20} around the announcement day (t_0).

The excess returns for each security i at time t is given by the following equation

$$ER_{it} = R_{it} - \hat{\alpha}_i - \hat{\beta}_i R_{mt} \qquad (4\text{-}3)$$

where

ER_{it} = the excess return for security i at time t.

R_{it} = the realized return on security i at time t.

$\hat{\alpha}_i$, $\hat{\beta}_i$ = estimates of α_i and β_i from the market model.

R_{mt} = the returns on the equal weighted market index.

The market model applied to all firms in the sample and the excess return (ER_{it}) are calculated for each day relative to the announcement day. The average excess return for the portfolio of N firms is given by

$$\overline{ER}_t = \frac{1}{N} \sum_{i=1}^{N} ER_{it} \qquad (4\text{-}4)$$

where

t = -20, ..., + 20

N = the number of securities included in the portfolio for each day t.

The cumulative excess return around the event date is the sum of the average excess returns and is given by the following equation

$$CER_t = \sum_{t=-20}^{t=+20} \overline{ER}_t \qquad (4\text{-}5)$$

where

t = -20, -19, ..., -1, 0, +1, ..., +19, +20

To test if the average excess returns are significantly different from zero, a t-statistic was used. The test statistic is the ratio of the mean excess return to its standard deviation on any event day, which is distributed student-t under the null hypotheses and is given by the following equation

$$t = \frac{\overline{ER}_t}{STD(ER_t)} \qquad (4\text{-}6)$$

Standard deviations were estimated from the time series of the mean excess returns from t_{-120} to day t_{-20}, and is given by the following equation

$$STD(ER_t) = \frac{\sum_{t=-120}^{t=-20} (\overline{ER}_t - \overline{\overline{ER}})^2)^{\frac{1}{2}}}{(N - 1)} \qquad (4\text{-}7)$$

where

$$\overline{\overline{ER}} = \frac{1}{N} \sum_{t=-120}^{t=-20} \overline{ER}_t \qquad (4\text{-}8)$$

The test statistic is distributed as a student-t distribution, and is valid under the assumption that the mean excess returns are normally distributed, independent and stationary over time.

Bond Data Description

The second part of this study is concerned with returns to bond-holders of the merging firms around merger announcements. Hence, we need two bond samples--one for the acquiring and the other for acquired

firms. To construct the bond samples, the following procedures were followed.

Obtaining bond issues. From the sample of firms that have returns available on the CRSP tape, we determined if the firm had straight bond issues before the announcement date. We considered only straight debt; convertible bonds were excluded, this due to the fact that the behavior of convertible bond prices is more or less explained by the behavior of common stock prices. Because the only practical source of daily bond prices is the Wall Street Journal, bond issues had to be listed in the New York Stock Exchange (NYSE) or the American Stock Exchange (ASE) for their prices to be available. Barron's (1962-1971) and Moody's Bond Record (1972-1982) were used to identify firms whose debt issues are listed on NYSE or ASE.

Collecting bond prices. Daily bond prices were collected from the Wall Street Journal. Prices were gathered for periods from 30 days before to 10 days after each merger announcement. Bond issues which had at least three trading prices available, including the announcement day, during the 41-day period were considered eligible to enter the sample. This is because two prices required to calculate each return and two returns are needed; one during the estimation period and the other in the announcement. Bond issues which had less than three trading prices available during the 41 days were excluded. This exclusion was made because two prices are needed to calculate one holding period return.

In the final analysis we were left with 64 bonds for the bidding firms and 29 bonds for the target firms. Table 4-10 and 4-11 show the

Table 4-10

The Frequency Distribution of the Bond Sample for the Acquiring Firms by Announcement Year

Year	Frequency	Cumulative Frequency	Percent	Cumulative Percent
63	0	0	0.00	
64	6	6	9.375	17.188
65	5	11	7.813	17.188
66	2	13	3.125	20.313
67	3	16	4.688	25.001
68	3	19	4.688	29.689
69	4	23	6.250	35.939
70	3	26	4.688	40.627
71	2	38	3.125	43.752
72	2	30	3.125	46.877
73	2	32	3.125	50.002
74	3	35	4.688	54.690
75	1	36	1.563	56.253
76	9	45	14.063	70.316
77	3	48	4.688	75.004
78	1	49	1.563	76.567
79	5	54	7.813	84.380
80	3	57	4.688	89.968
81	3	60	4.688	93.756
82	4	64	6.250	100.00

Table 4-11

The Frequency Distribution of the Bond Sample for the Acquired Firms by Announcement Year

Year	Frequency	Cumulative Frequency	Percent	Cumulative Percent
63	0	0	0.00	0.00
64	0	0	0.00	0.00
65	1	1	3.448	3.448
66	0	1	0.00	3.448
67	3	4	10.344	13.797
68	2	6	6.896	20.688
69	0	6	0.00	20.688
70	1	7	3.488	24.136
71	0	7	0.00	24.136
72	1	8	3.448	27.584
73	1	9	3.448	21.032
74	1	10	3.448	34.480
75	0	10	0.00	34.480
76	1	11	3.448	37.928
77	4	15	13.793	51.721
78	8	23	27.586	79.307
79	1	24	3.448	82.755
80	2	26	6.896	89.651
81	3	29	10.344	100.00
82	0	29	0.00	100.00

distribution of the acquired and acquiring firms bonds, respectively. Appendix A includes a listing of the sample by company, announcement date and whether the bidders or the targets has bond outstanding.

Thus, we can summarize the restrictions on the bond sample by the following points:

1. Both the acquiring and the acquired firms engage in a complete merger between June 30, 1962 and December 31, 1982.
2. The merging firms have publicly traded nonconvertible bonds outstanding at least 30 days before the announcement day.
3. Nonconvertible bonds must be among those listed on NYSE or ASE for their prices to be available.
4. Each bond must have at least one price available on the announcement day, before and after the announcement day, and during the estimation period in order to calculate the return.

The Calculation of Bond Returns

Since the holding period returns were utilized in this study, the following formula was used to calculate bond returns:

$$R_{i,t} = \frac{(P_{i,t} + (\frac{C}{360})D_t) - (P_{i,t-1} + (\frac{C}{360})D_{t-1})}{P_{i,t-1} + (\frac{C}{360})D_{t-1}} \qquad (4\text{-}9)$$

where

$R_{i,t}$ = the holding period daily rate of return on bond (i) at time (t)

$P_{i,t}$ = the market price of bond (i) at day (t)

$P_{i,t-1}$ = the market price of bond (i) at day (t-1)

C = the annual coupon payment per bond

C/360 = the coupon earned from holding the bond one day

D = the number of days accrued toward the next coupon payment at the end of day (t)

Since the quoted bond price does not include the interest accruals, the daily bond returns were adjusted for daily interest accruals. The dates of interest payments were obtained from Moody's Bond Record.

Method of Analysis of the Bond Data

The Mean Adjusted Return (MAR) model was utilized in this study to generate the abnormal performance around the merger announcement day. The methodology, which is described by Masulis (1980) and Brown and Warner (1980), and used by Masulis (1980), Dann (1981) and Handjinicolaou and Kalay (1984), and is based on the following assumptions:

1. The process generating bond return is stationary
2. The time series return distribution is representative of the bond returns distribution.

The advantage of using this procedure can be summarized by the following points:

1. To avoid the problems and the complexities associated with other models, i.e., the market model and the determination of the market index. Also to avoid the specification and estimation problems associated with determining the relationship between the bond returns and the return on the market index.
2. The Mean Adjusted Return Model does not depend on the assumptions of other models, i.e., the Capital Asset Pricing Model, being true.

3. Brown and Warner (1980) found that the Mean Adjusted Model (MAR) is at least as powerful, if not more powerful, than other alternative market approaches.

The Mean Adjusted Return model states that

$$R_{i,t} = E(R_{i,t}) + e_{i,t} \qquad (4\text{-}10)$$

where

$R_{i,t}$ = the return on bond (i) at day (t)

$E(R_{i,t})$ = the expected return on bond (i) at day (t)

$e_{i,t}$ = the random disturbance with $E(e_{i,t}) = 0$

The expected return, $E(R_{i,t})$ must be estimated from a time series of the bond returns over a representative period which does not include the event period, and is called the comparison period. In order to generate abnormal performance measure and to test for the significance of our hypotheses using this model, we followed the following steps:

Defining the announcement period and the estimation period. We defined the announcement date as the day when the first public announcement about the merger is mentioned in the Wall Street Journal. The return over event day t=0 and t=-1 is used to examine the impact of merger announcement. This is done because news reaches the market via the Wall Street Journal before the close of trading on the trading day prior to the publication date. Thus the effect of some merger announcement will occur on day t=-1.

We followed the following steps for the bond return:

1. We defined the event period to run from 10 days before to 10 days after the announcement day (-10, -9, ..., -1, 0, +1, ..., +9, +10). The time horizon was not increased to a longer

period because of the difficulty associated with collecting bond prices and the belief that 20 days around the announcement day is enough to capture the impact of merger announcement.

2. The estimation period runs from day -30 to day -11 a total of 20 days which were used to estimate the mean and the variance of the excess returns.

3. Portfolio formulation. A portfolio of bond returns was formulated for each day from t_{-30} to t_{+10}. The portfolio of daily returns is the arithmetic average of bond returns. Bonds for which returns were not available at any particular day were excluded from the portfolio mean returns of that particular date. Hence, the number of bonds in the portfolios will be allowed to vary from one day to another. The arithmetic mean formula, used to calculate mean return for each day, is

$$R_t = \frac{1}{N_t} \sum_{i=1}^{N_t} R_{i,t} \qquad (4\text{-}11)$$

where t = -30, ..., -1, 0, +1, ..., +10 and N_t is the number of good returns in a portfolio on a given day t. $R_{i,t}$ is the bond daily returns for day t (the holding period returns from holding a bond from a trading date to another). The comparison period mean return is formed from the daily mean returns. That is, the comparison period mean return is the average of the time series of daily mean returns for the period from day

t_{-30} to day t_{-11}, a total of 20 days. The formula used to calculate the comparison period mean returns is:

$$R = \frac{1}{20} \sum_{-30}^{-11} R_t \qquad (4\text{-}12)$$

4. The excess return is defined as the difference between the daily portfolio return for each event date, from day t_{-10} to day t_{+10}, and the comparison period return. It is given by

$$ER_t = R_t - R \qquad (4\text{-}13)$$

where ER_t is the average excess return for each event date, and t = -10, ..., -1, 0, +1, ..., +10.

5. Test of significance. To know if the announcement period excess returns are significantly different from the comparison period mean excess return, a significance test is needed. In other words, to accept or reject the null hypotheses that there is no difference between an announcement period excess return and the corresponding comparison period mean excess return, a significance test is required. A student t-distribution is given by the following equation

$$t = \frac{ER_t}{\hat{STD}_{(ER_t)}} \qquad (4\text{-}14)$$

where ER_t = the average excess return for each event date (-10, ..., -1, 0, +1, ..., +10); $STd_{(ER_t)}$ = the estimated standard deviation of the excess return and it is estimated over the period of day t_{-30} to day t_{-11}, using the following equation:

$$\hat{STD}(ER_t) = \left[\sum_{t=-30}^{t=-11} (ER_t - \overline{ER})/19 \right]^{\frac{1}{2}} \qquad (4\text{-}15)$$

$$\overline{ER} = \frac{1}{20} \sum_{t=-30}^{t=-11} ER_t$$

The cumulative excess return is calculated over the period from day t_{-10} to day t_{+10} using the following equation

$$CER_T = \sum_{t=-10}^{T} ER_t \qquad (4\text{-}16)$$

To test for the significance of the cumulative excess return, the following test statistic was used

$$t = \frac{CER_T}{\hat{STD}_{(CER)}} \qquad (4\text{-}17)$$

where $\hat{STD}_{(CER)}$ is the estimated standard deviation of the cumulative excess returns and is given by

$$\hat{STD}_{(CER)} = \hat{STD}_{(ER_t)} \sqrt{n} \qquad (4\text{-}18)$$

and n is the number of days in the event period. The test statistic is distributed as a student t-distribution and it is valid under the assumption that the mean excess returns are normally distributed, independent and stationary over time.

The Cross Sectional Methodology

The arguments advanced in Chapter two explain the impact of merger announcements on the securityholders of the merging firms through a set of firm specific characteristics. In this section, we develop an

expectation model to examine the abnormal returns cross-sectionally and to test the hypotheses advanced in Chapter two.

We assume that the gain from merger announcements for firm i is a linear function of k characteristics of the firm. Formally, we hypothesize that the excess return for firm i is given by the following linear equation

$$ER_i = \sum_{k=1}^{k} \beta_k M_{ik} \qquad (4\text{-}19)$$

where

ER_i = the excess return to securityholders of firm i

β_i = the coefficient of the k^{th} characteristic

M_{ik} = the k^{th} characteristic of firm i

Since the change in the market value of the firm around merger announcement is observable, we can estimate via regression of the following form

$$ER_i = \beta_0 + \beta_1 M_{i1} + \beta_2 M_{i2} + \ldots + \beta_k M_{ik} + \epsilon_i \qquad (4\text{-}20)$$

where

β's = the parameter of the regression model

ϵ_i = represents the error component of the 204 firms in which we have good returns available for both acquiring and acquired firms. Complete data on the firms' characteristics were provided in 204 instances.

Description of Regression Variables

After we estimated the excess return around merger announcements through the event study, we then attempted to identify the sources of the gain based on the theories presented in Chapter two.

In order to capture the full impact of merger announcements, we selected to use a form of cumulative average residuals for each announcement and use it as dependent variable in the cross sectional equation. The following definition of the excess returns was used as dependent variables for the securityholders of the merging firms:

RETT = The cumulative excess returns of 20 days before including the announcement day for the target firm stockholders.

RETT1 = The cumulative excess returns of day (-1) and day zero for the target firms stockholders.

RETB = The cumulative excess returns of 20 days before including the announcement day for the bidding firms stockholders.

RETB1 = The cumulative excess returns of day (-1) and day zero for the bidding firms stockholders.

RBT = Returns to target bondholders calculated as the change in the announcement price (P_0) and the price 10 days before the announcement (P_{-10}) and it is defined as $RBT=(P_0-P_{-10})/P-10)$

RBT1 = The cumulative excess returns of day (-1) and day zero to target bondholders.

RBB = Returns for the bidders bondholders calculated as $RBB=(P_0-P_{-10})P_{-10}$.

RBB1 = The cumulative excess returns of day (-1) and day zero to bidding firms bondholders.

As we notice, the dependent variable is defined in two different ways. The cumulative excess returns from day -20 to day zero is included to capture the effect of any significant excess returns before

the announcement day which may be due to leakage of information, the sum of the excess returns of day (-1) and day zero is included because the highest excess returns occurs during these two days.

The independent variables which entered the cross-sectional equation consist of the following:

1. Relative price-earnings ratio (RPER). In order to examine price-earning ratio hypotheses, we used the relative price-earning ratios (RPER) which is the price-earning ratios of the acquired firm divided by the price earning ratio of the acquiring firm. Formally, it is

$$\text{RPER} = \frac{\text{(PER) of the target}}{\text{(PER) of the bidder}}$$

The price-earning ratio is defined as the closing price divided by earning per share which exclude extra ordinary items and discontinued operations, and it is obtained from the last year before the announcement date. The price earning ratio hypotheses implies that acquiring firms acquired firms with lower price earning ratios than its own. The market will then evaluate the combined earnings of the two firms at the higher price earning ratio of the acquiring firm. The increase in earning per share from PER differences will tend to raise the stockholders assessments of the future earnings, and this will lead to an increase in the market value of both firms. Thus, we expect to find the sign of RPER is positively related with the excess return to securityholders of both firms.

Both the Industrial Compustat tape and Standard and Poor Stock Reports are used to generate the price-earning ratios from one year before the announcement year for both acquiring and acquired firms.

2. Relative Tobin's Q-ratio (RTQR): The relative Q-ratio, or the valuation ratio, is included as a proxy for the possibility that acquired firms are undervalued. The RTQR is defined as

$$RTQR=\frac{\text{(market value of equity/book value of equity) to the target)}}{\text{(market value of equity/book value of equity) to the bidder)}} \quad (4\text{-}21)$$

The market value is the number of shares outstanding multiplied by the price per share, and the book value is book value per share multiplied by the number of shares outstanding for the year before the announcement year. We expect this ratio to be positively related with the excess returns of both firms.

3. Relative Debt-Equity ratio (RDER): The RDER is included to examine the leverage effect hypotheses and to capture the potential of the target firm to add to the debt capacity of the acquiring firm because of the underutilization of the target debt. The leverage ratio is defined as the book value of the long term debt divided by the market value of equity. Formally, it is

$$DER = \frac{\text{total book value of long term debt}}{\text{total market value of equity}} \quad (4\text{-}22)$$

and the relative leverage ratio (RLR) is given as

$$RDER = \frac{\text{DER of the target}}{\text{DER of the bidder}} \quad (4\text{-}23)$$

Long term debt was obtained from the Industrial Compustat tape and from Standard and Poor's Stock Report for the year before the announcement year.

4. Relative size (RSIZE). To examine the managerialism hypotheses, which implies that managers are motivated to increase the size of their firms because the compensation to managers is a function of the

size of the firm, and thus they adopt a lower investment hurdle rate, we included the relative size which is defined as

$$\text{RSIZE} = \frac{\text{total market value of equity to target}}{\text{total market value of equity to bidders}} \qquad (4\text{-}24)$$

We expect to find the relative size is negatively related with excess returns to the bidding firm and positively related with the target excess returns. The market value of equity for both target and bidder firms is defined as the closing market price multiplied by the number of shares outstanding one year before the announcement year, and it is obtained from the Industrial Compustat tape.

5. Relative variance (RVAR). The relative variance was included to examine the hypotheses that variance effect could reflect the management's action to maximize the value of its firms by acquiring targets with lower variance to reduce the variability of their firms. The relative variance is given by

$$\text{RVAR} = \frac{\text{variance of the target returns}}{\text{variance of the bidder returns}} \qquad (4\text{-}25)$$

6. Method of payment (MPAY). To capture the effect of different methods of payment, we included a dummy variable to distinguish between cash versus security mergers. The variable takes the value of one for cash and zero otherwise.

7. Merger type (MTYPE). To examine the argument whether merger produces financial or real synergies, we included a dummy variable to examine the difference between conglomerate versus nonconglomerate and another variable to account for nonconglomerate versus pure conglomerate mergers.

8. Regulation (REGU). To account for the regulation effect over time, we included one dummy variable which takes the value of one for the period before July 1968 and zero after. The main two regulations which we considered were the Williams Amendments of July 1968 and the Tax Reform Act of December 1969. The period after July 1968 can be described as a regulatory period.

Based on this discussion, we set out to estimate the parameters of the following equation:

$$\begin{aligned} CER_i = {} & B_0 + B_1 RPER_i + B_2 RTQR_i + B_3 RDER_i \\ & + B_4 RSIZE_i + B_5 RVAR_i + B_6 MPAY_i \\ & + B_7 MTYPE_i + B_8 REGU_i + e_i \end{aligned} \tag{4-26}$$

The predicted sign of each coefficient are summarized in Table 2-2.

CHAPTER 5

RESULTS

The objective of this study is to examine the returns to stockholders and bondholders of both acquiring and acquired firms around the merger announcement day and to examine the factors which may explain the returns to each group.

This chapter is divided into three sections, the first includes the results from the overall sample of stockholders of acquiring and acquired firms. The second section presents the results of the bond samples of acquiring and acquired firms, and the last section contains the results of a cross-sectional model for each group of security-holders.

Returns to Acquired Firms Stockholders

The average excess returns (AER), t-statistics, the cumulative average excess returns (CAER), and the percent positive to the acquired firm stockholders are presented in Table 5-1. Figures 5-1a and 5-1b display graphically the cumulative and average excess returns for the twenty days prior to and twenty days after the first public announcement of merger.

The main result is the large positive excess returns earned by the stockholders of the acquired firms on the day of the merger announcement, t_0, and the day before, t_{-1}. The average excess return on day 0

Table 5-1

Market Model Residuals over the Period T_{-20} through T_{+20} for 361 Acquired Firms.

Day	Percentage Daily AER	Percentage of Daily CAER	t-Statistic of AER	Percent AER Positive
-20	0.008	0.008	0.662	0.448
-15	-0.054	1.354	-0.420	0.476
-10	0.281	2.971	1.674**	0.506
- 9	0.411	3.383	2.308*	0.498
- 8	0.842	4.226	3.937*	0.540
- 7	0.815	5.041	3.549*	0.529
- 6	0.438	5.480	3.609*	0.512
- 5	0.540	6.020	3.210*	0.523
- 4	1.584	7.604	6.206*	0.628
- 3	0.965	8.560	5.506*	0.573
- 2	1.892	10.462	8.516*	0.634
- 1	4.310	14.773	8.895*	0.692
0	4.818	19.591	7.467*	0.664
1	0.360	19.951	1.757**	0.473
2	0.157	20.109	1.065	0.476
3	0.080	20.190	0.646	0.493
4	0.051	20.241	0.435	0.459
5	-0.086	20.155	-0.665	0.459
6	0.265	20.420	2.421*	0.526
7	0.181	20.601	1.732**	0.515
8	0.234	20.835	1.891**	0.515
9	0.046	20.882	0.400	0.479
10	-0.271	20.611	-1.898**	0.454
15	-0.005	20.541	-0.051	0.440
20	-0.056	20.523	-0.421	0.457

* Significant at 0.01 level.
** Significant at 0.05 level.

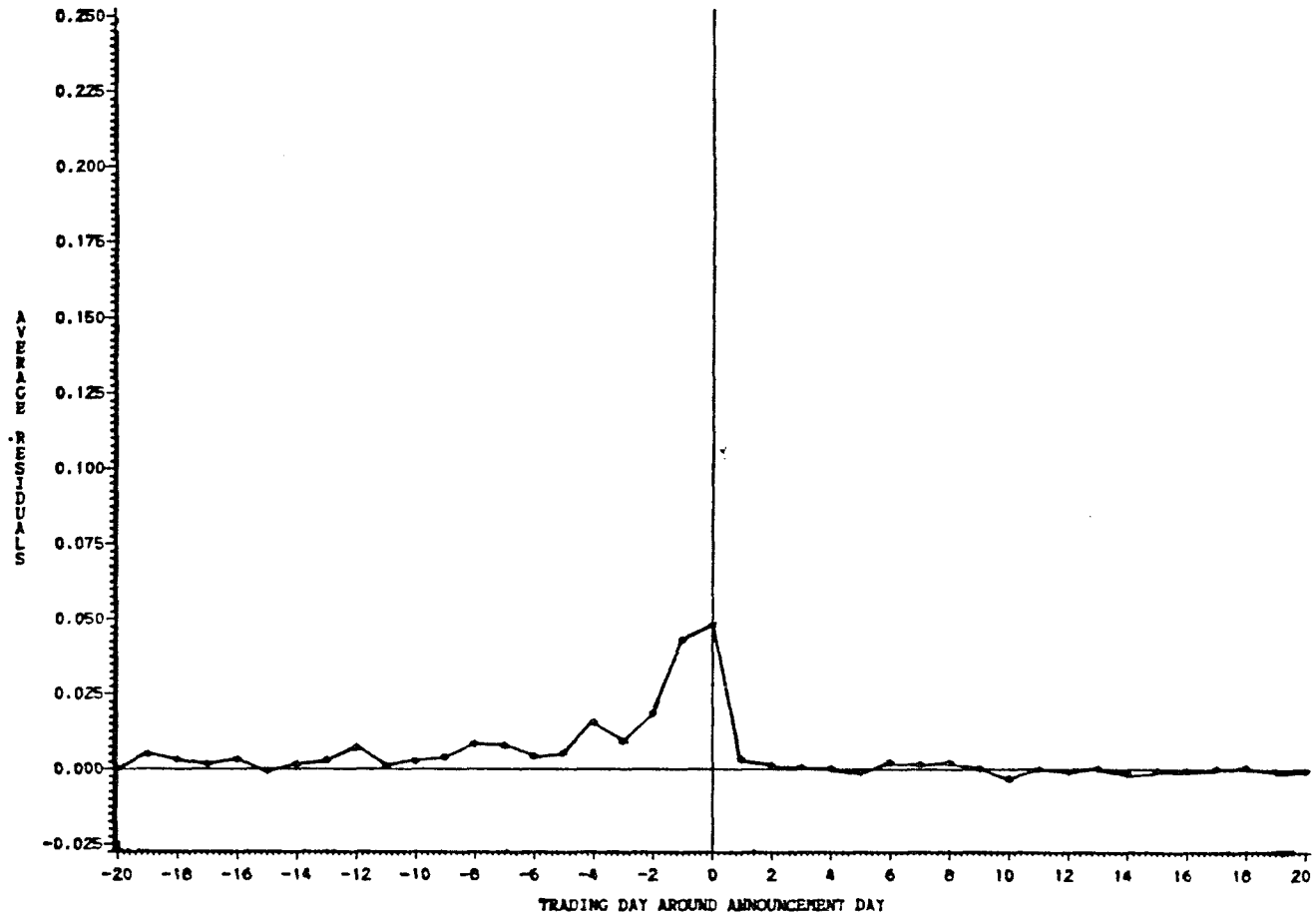

Figure 5-1A. Average Excess Returns to Target Firm Stockholders
20 Days before thru 20 Days after Merger Announcement

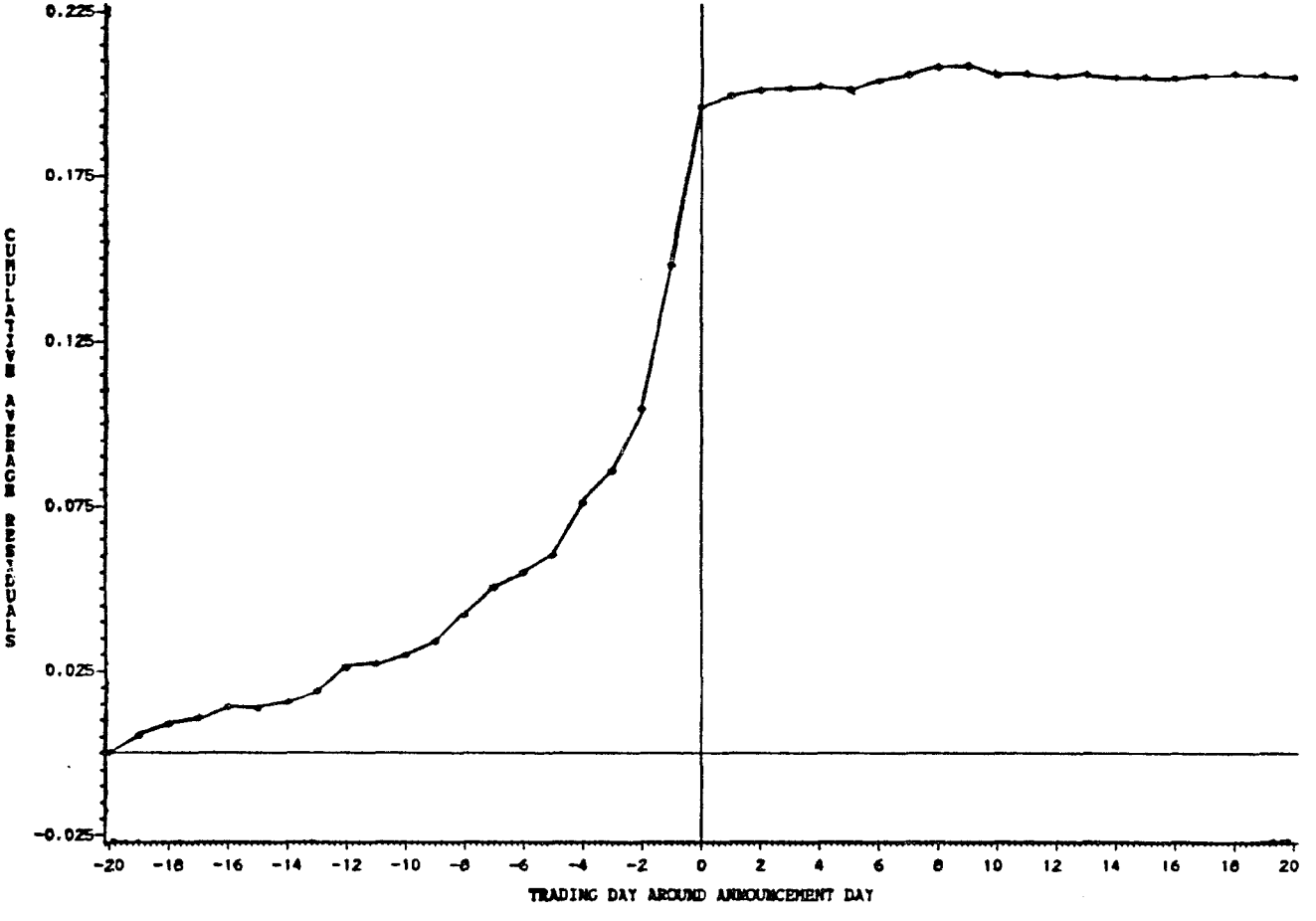

Figure 5-1B. Cumulative Average Excess Returns to Target Stockholders 20 Days before thru 20 Days after Merger Announcement

is 4.82 percent with a t-statistic of 7.47. On day t_{-1}, the average excess return is 4.31 percent with a t-statistic of 8.89, which is statistically significant at the 0.01 level. The cumulative excess return from t_{-20} through the merger announcement day, t_0, is 19.59 percent.

These findings are consistent with previous empirical results. Dodd (1980) reported a cumulative excess return of 21.78 percent for twenty days before and through the day of the first public announcement. Asquith, Bruner and Mullins (1983) reported a 20.5 percent CAER, while Asquith (1983) reported 13.3 percent for the same period. Jensen and Ruback (1983) reported a 15.9 percent average CAER from five studies investigating the returns to acquired firms stockholders.

In addition to the large positive excess returns at the announcement day and the day before, a rise is also shown in the period immediately prior to the announcement date (Figures 5-1a and 5-1b). Table 5-1 documents this movement in which the excess returns are positive and statistically significant from day t_{-10} to t_0. These results indicate that the largest excess returns occur on the announcement day, but there is still some positive excess return during the 10 days before the announcement day. This pattern of abnormal returns can be explained by the leakage of information about the merger before it appears in the Wall Street Journal (Keown and Pinkerton (1981)), but still the excess returns on day t_0 and t_{-1} dominate all other daily returns. This indicates that most of the new information becomes available on these days.

Table 5-2 presents a comparison of the mean cumulative excess returns over the twenty-one days from t_{-20} to t_0 across all merger types. The t-statistic represents a test of the null hypotheses that the difference between two means is different from zero and it is given by

$$t = [\overline{CER}_1 - \overline{CER}_2]/S_p \sqrt{\frac{1}{m} + \frac{1}{n}} \qquad (5\text{-}1)$$

where

$\overline{CER}_1$ = the mean of the cumulative excess returns for group one (non-conglomerate);

$\overline{CER}_2$ = the mean of the cumulative excess returns for group two (conglomerate);

m, n = the number of firms in group one and two, respectively;

$\overline{S}_p^2$ = $(m-1)\overline{S}_1^2 + (n-1)\overline{S}_2^2 \;/\; (m+n-2)$;

which is the pooled standard deviation where:

S_1^2 = estimated variance of group one;

S_1^2 = estimated variance of group two and t has (m+n-2) degrees of freedom.

Panel A in Table 5-2A shows that when all mergers are viewed together, the cumulative excess returns are virtually the same across merger type and the t-statistics between any two combinations are not significant. Panel B (Table 5-2A) also indicates that there is no difference across merger type when cash is used as the medium of exchange. As shown in panel C, there is a slight difference between conglomerate versus non-conglomerate when securities are used as a medium of exchange. The main indication is that there is no significant difference across merger type, which is consistent with the early conclusions of Wansley, Lane and Yang (1983), and it is in contrast to

Table 5-2A
Cumulative Excess Returns Comparison by Type of Merger
for Acquired Firms.

Type of Merger	Number of Firms	Mean of CER	t-Statistic for the Mean Difference		
			Non-Conglomerate	All-Conglomerate	Pure Conglomerate
Panel A Merger Type:					
Non-conglomerate	56	21.299	0.0	0.633	-0.098
All conglomerate	305	19.302	-0.633	0.0	-0.969
Pure conglomerate	119	21.659	0.098	0.969	0.0
Panel B Merger Type - Cash					
Non-conglomerate	18	24.497	0.0	-0.065	-0.197
All conglomerate	124	24.906	0.065	0.0	-0.316
Pure conglomerate	51	26.221	0.197	0.316	0.0
Panel C Merger Type - Securities					
Non-conglomerate	36	20.441	0.0	1.468	0.131
All conglomerate	147	15.221	-1.468	0.0	-1.277
Pure conglomerate	49	19.534	-0.131	1.277	0.0

the conclusion of Elgers and Clark (1980) that conglomerate mergers benefit acquired stockholders more than does non-conglomerate mergers.

Table 5-2B shows that the cumulative excess returns comparison between different methods of payment. The mean CER for cash mergers is 24.855 percent, while it is 16.248 percent for security mergers. The difference is significantly different from zero at the 0.01 level with a t-statistic of 2.3.

This result is consistent with earlier results of Wansley, Lane and Yang (1983), in which they found that cash mergers provide higher returns than security mergers for the stockholders of the acquired firms. This study attributes the difference between method of payment to accounting treatment and tax treatment of the merger.

In summary, this part of the study examined the excess returns to stockholders of the acquired firms around merger announcement day. The evidence indicates that acquired firms stockholders earn statistically significant positive excess returns twenty days before and through the announcement day of merger. While the evidence is consistent with the information effect hypotheses, we cannot draw this conclusion at this stage until we examine the return to bondholders of the acquired firms to see if this return came at the expense of other securityholders.

The evidence indicates that there is no significant difference between the CER across merger type. This may be due to the diversity of operation of the firms involved in merger which makes it difficult to classify each merger under one category or another. This, in turn,

Table 5-2B

Cumulative Excess Return Comparison by Method of Payment
for Acquired Firms

Method of Payment	Number of Firm	Mean CER	t-Statistics of the Mean Difference		
			Cash	Securities	Combination
Cash	142	24.855	0.0	2.299*	2.024*
Securities	183	16.248	-2.299*	0.0	0.062
Combination	36	16.036	-2.024*	-0.062	0.0

* Significant at 0.01 level

makes it difficult to determine if one class produces financial and/or operational synergies or not.

Differences in returns do exist between different methods of payment, where cash mergers provide higher and significant positive return than security merger to the stockholders of acquired firms. This difference was attributed, by previous studies, to tax and accounting treatment of merger.

Returns to Acquiring Firms Stockholders

Table 5-3 shows the average and cumulative excess returns twenty days before and twenty days after the announcement day for acquiring firms. Figures 5-2a and 5-2b graphically depict the cumulative and average excess returns, respectively. As indicated in Table 5-3, there is little market reaction on the announcement day, even though the two-day excess return, 0.31 percent, is significant at the 0.01 level. The t-statistic is 2.48 for the portfolio of two-days announcement. Over the entire 41-day period the stockholders of the acquiring firms gain 1.21 percent with a t-statistic of 2.3.

Table 5-4 shows the distribution of the cumulative excess returns over different intervals of time. The results which appear in this table are consistent with earlier work of Asquith, Bruner and Mullins (1983) in which they found the CAER to be 2.6% for twenty days before and twenty days after the announcement day. Malatesta (1983) reported a CAER of 0.90 percent, and Eckbo (1983) reported a 1.58 percent CAER twenty days before and through the announcement date. These results are

Table 5-3

Market Model Residuals over the Period T_{-20} throught T_{+20} for 579 Acquiring Firms

Day	Percentage of Daily AER	Percentage of Daily CAER	t-Stastic of AER	Percent AER Positive
-20	0.060	0.060	0.699	0.483
-15	0.126	0.291	1.579	0.497
-10	0.128	0.267	1.425	0.516
- 9	0.113	0.380	1.338	0.483
- 8	0.025	0.406	0.321	0.469
- 7	0.108	0.514	1.893**	0.523
- 6	0.091	0.606	1.065	0.476
- 5	-0.126	0.479	-1.611	0.468
- 4	0.148	0.627	1.709**	0.509
- 3	-0.115	0.512	-1.458	0.443
- 2	-0.001	0.511	-0.015	0.476
- 1	0.034	0.545	0.405	0.476
0	0.272	0.817	3.348*	0.506
1	0.084	0.902	0.905	0.490
2	0.033	0.935	0.419	0.497
3	0.158	1.093	1.896**	0.509
4	0.185	1.278	2.233*	0.514
5	-0.018	1.260	-0.211	0.480
6	-0.030	1.230	-0.347	0.502
7	-0.019	1.211	-0.240	0.471
8	-0.118	1.092	-1.535	0.456
9	-0.019	1.073	-0.214	0.473
10	-0.020	1.053	-0.246	0.499
15	-0.081	1.138	-1.040	0.461
20	0.068	1.208	0.790	0.481

* Significant at 0.01 level.

** Significant at 0.05 level.

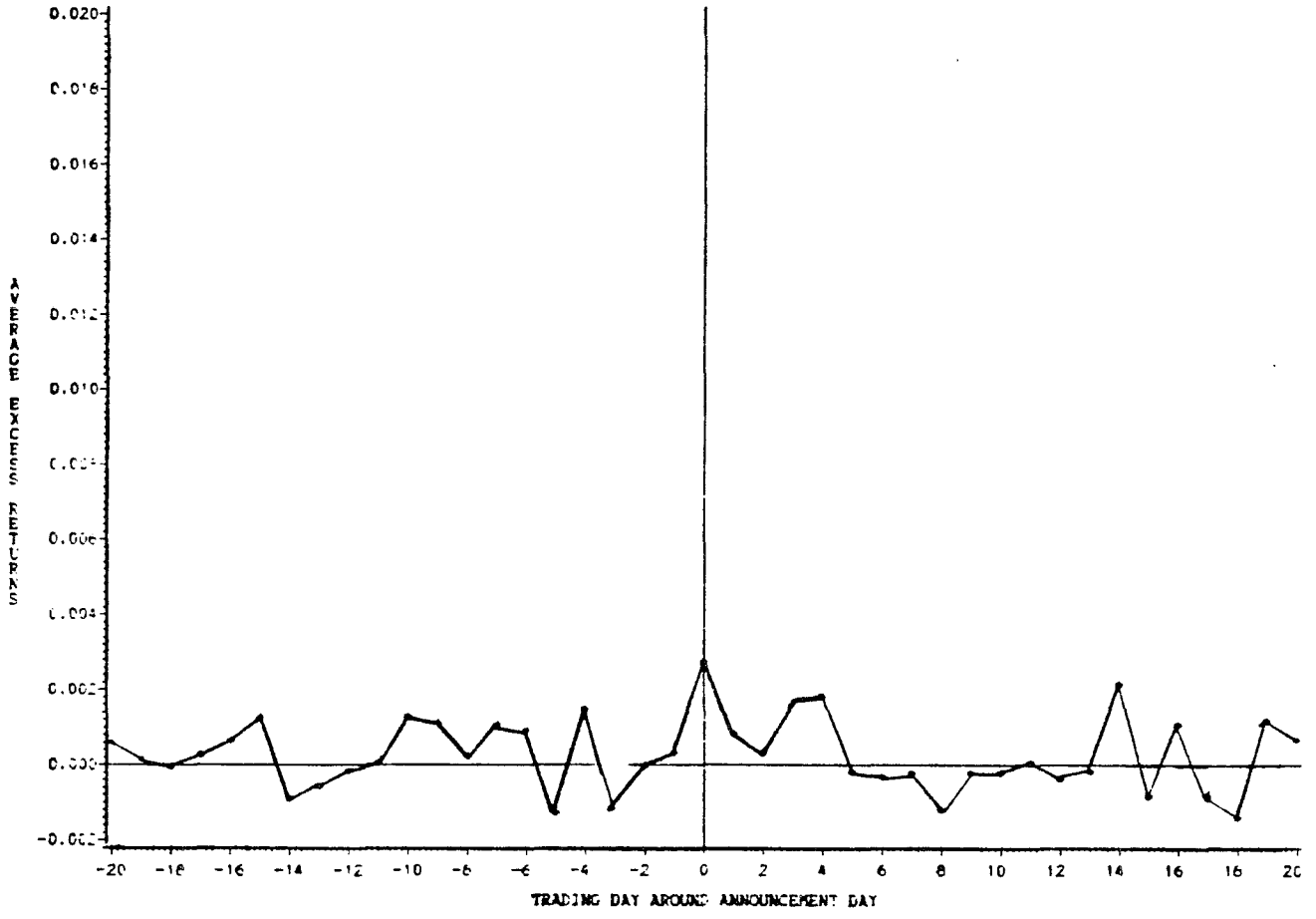

Figure 5-2A. Average Excess Returns to Bidding Firms Stockholders 20 Days before thru 20 Days after Merger Announcement

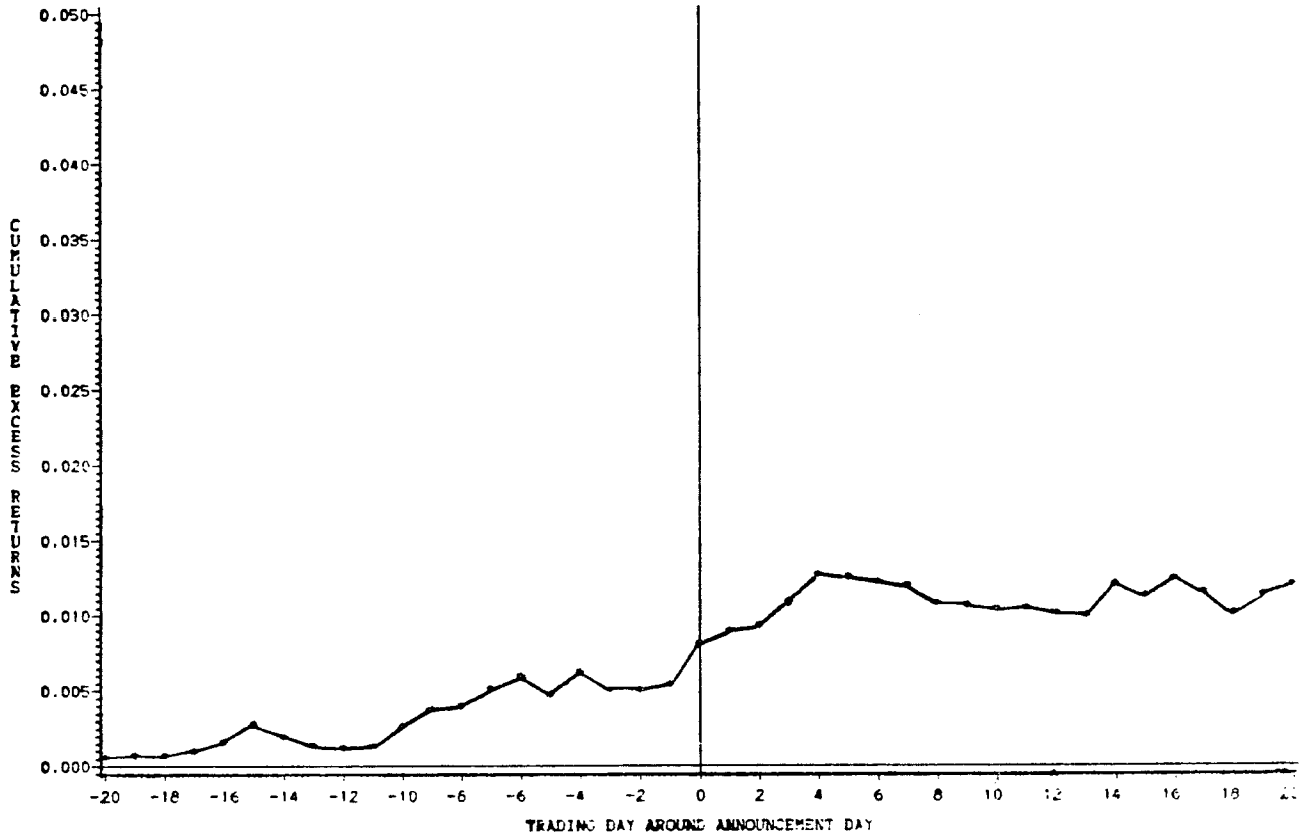

Figure 5-2B. Cumulative Average Excess Returns to Bidding Firms Stockholders 20 Days Before thru 20 Days After Merger Announcement

Table 5-4

Cumulative Average Excess Returns Over Different Intervals of Time for Acquiring Firms - Stockholders

Time Period	CAER%	t-Statistic
t_{-20} to t_{-2}	0.51	1.38
t_{+2} to t_{+20}	0.27	0.71
t_{-20} to t_{+20}	1.21	2.30*
T_{-1} to t_0	0.31	2.48*
t_{-1}	0.03	0.41
t_0	0.27	3.35*

* Significant at 0.01 level.

in contrast with the findings of Dodd (1980), who reported a negative two-days excess return to the acquiring firms stockholders.

Table 5-5a presents a comparison of the mean cumulative excess returns across merger type. When all types of mergers are considered together, it appears that there is a difference between conglomerate and non-conglomerate mergers. Conglomerate mergers are shown to provide a higher return to stockholders of the acquiring firms than non-conglomerate mergers, but the difference is not highly significant. When cash mergers are considered across merger type, the difference becomes larger and statistically significant at the 0.10 percent level. These results are consistent with the findings of Elgers and Clark (1980) who found that conglomerate mergers benefit the acquiring shareholders more than non-conglomerate mergers.

In contrast with the results of Wansley, Lane and Yang (1983), the findings shown in Table 4-5b indicate that there is no significant difference in residuals between different methods of payment. Although the cash merger CAER is 1.1368 percent compared to 0.49% for security mergers, the difference is not significant.

In summary, the results reported in this section indicate that the acquiring firms stockholders gain a moderate abnormal return from merger. While this finding is consistent with the information effect hypothesis, we will postpone this conclusion until we examine the returns to bondholders of the acquiring firms because of the possibility of wealth transfer from bondholders to stockholders.

The results indicate that there is some difference between conglomerate versus non-conglomerate merger, in which conglomerate mergers

Table 5-5a

Cumulative Average Excess Returns Comparison by Type of Merger
for Acquiring Firms Stockholders

Type of Merger	Number of Firms	Mean of CAER %	t-Statistic for the Mean Difference		
			Non-Conglomerate	All Conglomerate	Pure Conglomerate
Merger Type					
Non-conglomerate	112	-0.09886	0.0	-1.132	1.227
All-conglomerate	476	1.11677	1.123	0.0	-0.204
Pure conglomerate	161	1.30917	-1.227	0.204	0.0
Merger Type - Cash					
Non-clonglomerate	34	-1.3475	0.0	1.634	-1.156
All-conglomerate	172	1.6278	1.634	0.0	0.620
Pure conglomerate	68	0.7594	1.156	-0.620	0.0
Merger Type - Securities					
Non-conglomerate	71	0.3546	0.0	-0.125	-0.734
All conglomerate	252	0.5266	0.125	0.0	-0.809
Pure conglomerate	77	1.6131	0.734	0.809	0.0

Table 5-5b

Cumulative Average Excess Returns Comparison by Method of Payment
for the Acquiring Firms Stockholders

Method of Payment	Number of Firms	Mean of CAER %	t-Statistic of the Mean Difference		
			Cash	Securities	Combination
Cash	206	1.1368	0.0	0.979	-0.753
Securities	323	0.4888	-0.979	0.0	-1.184
Combination	50	2.3682	0.753	1.184	0.0

provide higher returns than non-conglomerate mergers, a result which is consistent with the diversification and debt capacity rationale of the conglomerate merger.

The results also indicate that cash mergers provide slightly higher returns to acquiring stockholders than security mergers, though the difference is not significant.

Returns to Acquired Firms Bondholders

To evaluate the bond market's total response to a merger announcement, the average excess returns for each event were generated using the mean adjusted returns model, for a total sample of 64 bonds to acquiring firms and 29 bonds to acquired firms.

Table 5-6 gives the average and cumulative average excess returns and the t-statistics for 29 bonds issued by the acquired firms over the period of 10 days before until 10 days after the merger announcement. As seen in column 2, the number of bonds for each event day vary from day to day. This is because many bonds are not traded frequently, so the numbers reflect the number of bonds which have prices available for that day. The table shown that there are 12 days with negative returns versus 9 days of positive returns. Even though there are some days with large and significant positive returns, the largest negative returns occur on day zero where the average excess return is -0.66 percent, with a t-statistic of -2.364, which is statistically significant at the 0.01 level. The cumulative average excess return for day t_{-1} and day t_0 is -0.701 percent with t-statistic of -1.778. Figure 5-3a represents a graphic translation of the average excess returns.

Table 5-6

Average and Cumulative Average Excess Returns and
the t-Statistics to Acquired Firms Bondholders

Trading Day	Number of Bonds	Average Excess Return AER	t-Statistic of AER	Cumulative Average Excess Return CAER	t-Statistic of CAER
-10	18	-0.23728	-0.850	-0.23728	-0.850
- 9	16	0.59132	2.120*	0.35403	0.897
- 8	15	-0.12825	-0.459	0.22578	0.467
- 7	18	-0.43862	-1.572	-0.21284	-0.381
- 6	16	-0.07299	-0.261	-0.28583	-0.458
- 5	18	0.14560	0.522	-0.14023	-0.205
- 4	18	0.28055	1.005	0.14032	0.190
- 3	22	-0.08907	-0.319	0.05125	0.064
- 2	16	-0.26049	-0.934	-0.20924	-0.250
- 1	17	-0.04188	-0.150	-0.25113	-0.284
0	29	-0.65950	-2.364*	-0.91062	-0.984
1	18	0.12099	0.433	-0.89963	-0.817
2	18	-0.04995	-0.179	-0.83958	-0.834
3	18	0.44716	1.603	-0.39242	-0.376
4	22	-0.13380	-0.479	-0.52633	-0.487
5	19	0.08999	0.322	-0.43624	-0.391
6	15	0.26855	0.962	-0.16769	-0.145
7	16	0.29201	1.047	0.12432	0.105
8	19	-0.38070	-0.365	-0.25638	-0.210
9	21	-0.35936	-1.288	-0.61574	-0.493
10	18	0.49394	1.767**	-0.12280	-0.096

Comparison period mean adjusted return = 0.05912. Standard deviation of average excess return = 0.27889.
* Significant at 0.01 level.
** Significant at 0.05 level.

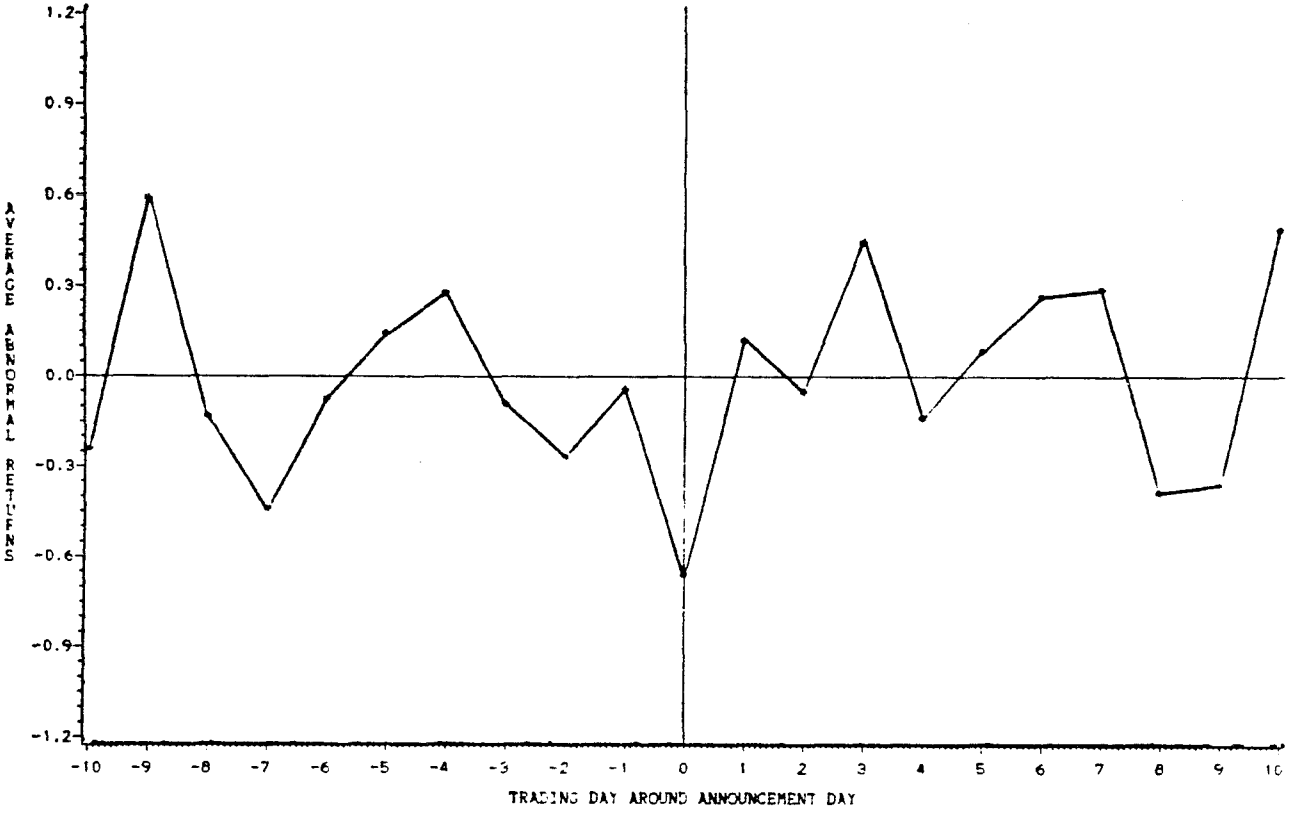

Figure 5-3A. Average Excess Returns to Target Firms Bondholders 10 Days Before thru 10 Days after Merger Announcement

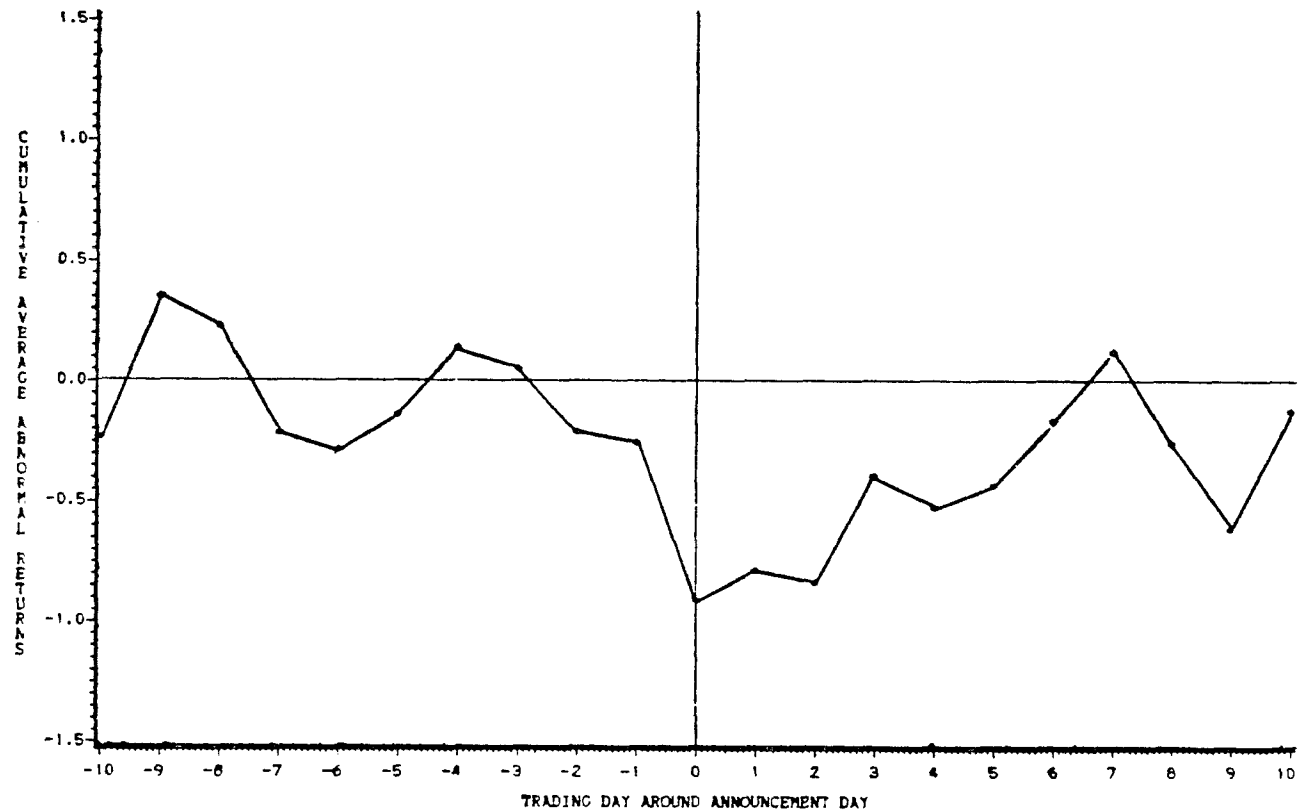

Figure 5-3B. Cumulative Average Excess Returns to Target Firms Bondholders 10 Days Before thru 10 Days After Merger Announcement

Column 5 (Table 5-6) and Figure 5-3b show the cumulative average excess returns over the period of 10 days before until 10 days after the merger announcement. The t-statistics are given in column 6. The cumulative average excess returns are negative but not statistically significant. None of the t-statistics are significant at any day, suggesting that the bondholders of the target firms do not gain from merger and the negative returns they have are not statistically significant.

These results are consistent with previous findings of Asquith and Kim (1982), in which they reported that the sum of returns from day t_{-1} and day t_0 are -0.110 percent to acquired bondholders with a t-statistics of -0.59. The results of this study show a -0.701 percent average excess return with a t-statistic of -1.778 over the same period.

Although Asquith and Kim (1982) do not provide an explanation about the negative returns to acquired bondholders, it is a point that needs more investigation. The negative returns to acquired bondholders may be explained by the fact that when the target is acquired, the bondholders lose the assets which serve as collateral to secure their debt. This is because the bondholders, whether they are secured or unsecured, have a priority in the event of default only to assets owned by the target, and when the acquiring firm considers the payment to the bondholders of the target, they consider the present value of the amount to be paid in the future. If the bonds have been issued at an interest rate that is substantially below the present effective rate for a similar security, then the price will decrease and the returns will be negative to the target bondholders. This is because the bidder uses the present

effective interest rate to discount the future payment to target bondholders, not the interest rate at the time when the bonds are issued.

Returns to Acquiring Firms Bondholders

The average and the cumulative average excess returns for the bondholders of the acquiring firms over the period from 10 days before merger announcement until 10 days after are presented in Table 5-7 and Figures 5-4a and 5-4b. Average excess returns were almost equally split between positive and negative observations with 11 positive and 10 negative. Comparison of the before and after merger periods shows 6 positive and 4 negative after the merger. The largest positive excess return, 0.689 percent with a t-statistic of 4.65, which is statistically significant at the 0.01 level occurred at day t_{-1}. The sum of the t_{-1} and t_0 excess return shows an average excess return of 0.859 percent with a t-statistic of 4.095, which is statistically significant at the 0.01 level.

Figures 5-4a and 5-4b depict the average and the cumulative average excess returns over a 21-day period. The cumulative average excess returns are positive. This shows that the bondholders of the acquiring firms earn 1.912 percent over 21 days before and after the merger announcement with a t-statistic of 2.812, which is significant at the 0.01 level.

The findings of this study indicate that the bondholders of the acquiring firms are in fact affected by merger announcements, and they gain a significant positive excess return. These findings are also

Table 5-7

Average and Cumulative Average Excess Returns and the t-Statistics for Acquiring Firms Bondholders

Trading Day	Number of Bonds	Average Excess Return AER	t-Statistic for AER	Cumulative Average Excess Return CAER	t-Statistic for CAER
-10	39	-0.170	-1.147	-0.170	-1.147
- 9	41	0.059	0.400	-0.110	-0.528
- 8	39	0.182	1.228	0.071	0.278
- 7	39	0.091	0.614	0.162	0.547
- 6	39	-0.174	-1.179	-0.012	-0.037
- 5	41	-0.008	-0.060	-0.021	-0.058
- 4	33	0.397	2.680*	0.376	0.958
- 3	36	-0.203	-1.372	0.172	0.411
- 2	34	0.543	3.664*	0.716	1.609
- 1	50	0.689	4.650*	1.405	2.997*
0	64	0.168	1.138	1.574	3.201*
1	36	0.351	2.369*	1.926	3.748*
2	38	-0.105	-0.707	1.821	3.405*
3	36	-0.045	-0.305	1.775	3.199*
4	38	-0.055	-0.373	1.720	2.994*
5	34	0.189	1.274	1.090	3.218*
6	35	-0.138	-0.935	1.770	2.895*
7	40	-0.221	-1.491	1.549	2.462*
8	33	0.140	0.944	1.689	2.613*
9	41	0.233	1.574	1.923	2.899*
10	35	-0.011	-0.075	1.911	2.812*

Comparison period mean adjusted return = 0.02758. Standard deviation of average excess return = 0.14833.
* Significant at 0.01 level.

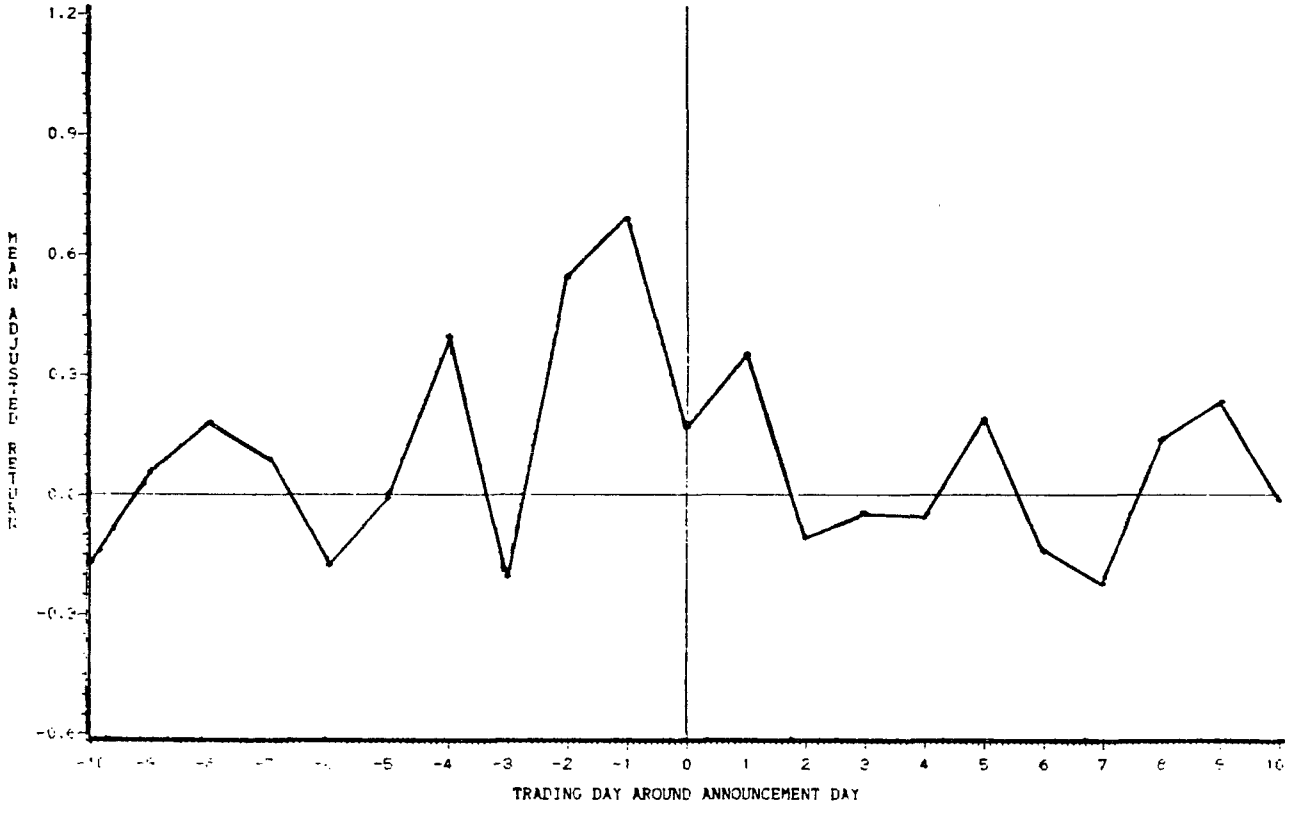

Figure 5-4A. Average Excess Returns to Bidding Firms Bondholders 10 Days before thru 10 Days After Merger Announcement

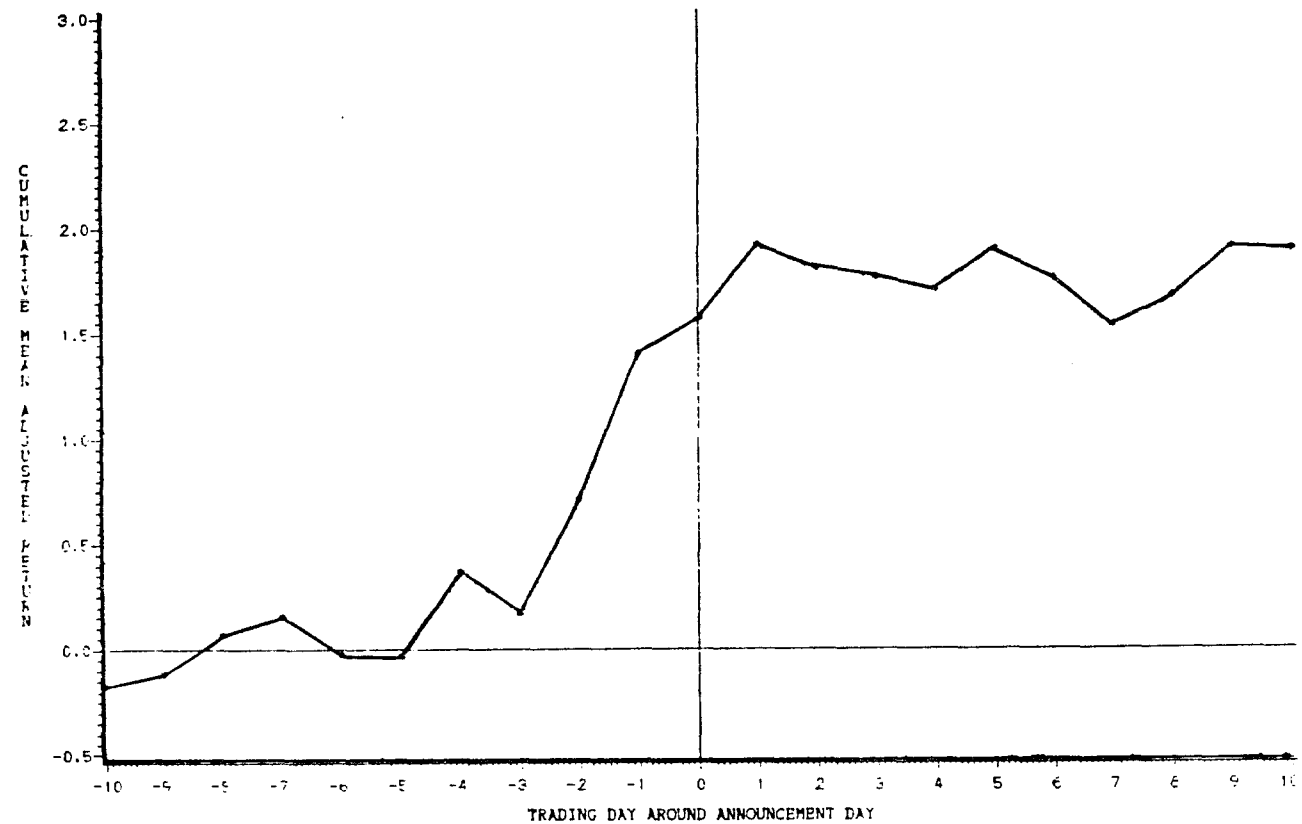

Figure 5-4B. Cumulative Excess Returns to Bidding Firms Bondholders 10 Days Before thru 10 Days After Merger Announcement

consistent with results of Settle, Petry and Hsia (1984) in which they found a 4 percent abnormal return during the merger announcement month. Asquith and Kim (1982) reported a 0.235 percent return over day t_{-1} and day t_0 with a t-statistic of 0.61, which is not statistically significant, while the results of this study show a 0.859 percent abnormal return over day t_{-1} and day t_0 with t-statistic of 4.095.

Information Versus Wealth Transfer Effect

One of the objectives of this study was to examine the information effect versus wealth transfer effect between the stockholders and the bondholders of the merging firms around merger announcement to determine if the gain to the stockholders of the merging firms comes at the expense of other securityholders, namely the bondholders, and to find out whether the bondholders gain from merger.

Table 5-8 provides a comparison between the cumulative excess returns to stockholders of the acquiring and acquired firms and the bondholders of acquiring and acquired firms over different intervals of time, along with their associated t-statistics. For the acquiring firms securityholders, the table shows that both the stockholders and the bondholders gain significant positive excess returns. Over day t_{-1} and t_0, the average excess return is 0.306 and 0.859 percent with t-statistics of 2.48 and 4.095, respectively. For the period of 10 days before the merger until day t_{-2}, both the stockholders and the bondholders of the acquiring firms have positive excess returns of 0.372 and 0.720 percent respectively, but they are not statistically

Table 5-8

Cumulative Average Excess Returns Comparison to the Securityholders of the Merging Firms Over Different Intervals of Time and the Associated t-Statistics

Time Period	Acquiring Stockholders	Acquiring Bondholders	Acquired Stockholders	Acquired Bondholders
t_{-10} to t_{-2}	0.372 (1.494)	0.72 (1.61)	7.772 (10.794)*	-0.209 (0.250)
t_{+2} to t_{+10}	0.151 (0.606)	-0.014 (-0.032)	0.659 (0.915)	0.667 (0.797)
t_{-10} to t_{+10}	0.914 (2.403)*	1.912 (2.812)*	17.921 (16.295)*	-0.123 (-0.096)
t_{-1} to t_0	0.306 (2.48)*	0.859 (4.095)*	9.129 (26.897)*	-0.701 (-1.778)**
t_{-1}	0.03 (0.41)	0.690 (4.650)*	4.311 (14.773)*	-0.042 (-0.150)
t_0	0.27 (3.35)*	0.169 (1.138)	4.818 (19.591)*	-0.660 (02.364)*

*Statistically significant at 0.01 level.

** Statistically significant at 0.05 level.

significant. Over the period of 2 days before the merger announcement until 10 days after, the returns are also not significant.

These findings are consistent with the information effect hypotheses, wherein both the stockholders and the bondholders of the acquiring firms are affected positively due to their expectation of future gain from merger. There is no evidence that there is a wealth transfer from the stockholders to the bondholders due to the diversification effect or from the bondholders to stockholders to the incentive effect.

Table 5-8 shows that the stockholders of the target firms gain a highly significant abnormal return (9.129 percent with t-statistic of 26.897) over day t_{-1} and day t_0, while the two days excess return to the bondholders of the target firm is -0.701 percent, with t-statistic of -1.778. Over the period from 10 days before the merger announcement until 2 days before, the stockholders of the target firm gain 7.772 percent, with a t-statistic of 10.794, while the bondholder's CAER is -0.209 percent with a t-statistic of -0.250, which is not significant.

For the period from 2 days after to 10 days after the merger announcement, both the stockholders and the bondholders have positive abnormal returns, but they are not statistically significant. The negative returns to target bondholders for the period prior to the merger announcement, though not highly significant, is attributed to the fact that the payment to the bondholders of the target is the present value of the future payment discounted at the effective interest rate, which is higher than the rate when the bonds are issued. These findings indicate that the stockholders of the target firm gain highly significant abnormal returns, which is consistent with the informational effect

Table 5-9

Spearman Correlation Coefficients Between the Average Excess Returns to Securityholders of the Merging Firms from Day t_{-10} to t_{+10}*

Abnormal Returns to:	Acquiring Bondholders	Acquiring Stockholders	Acquired Bondholders	Acquired Stockholders
Acquiring Bondholders	1.0000 (0.0000)	0.1234 (0.5942)	-0.1857 (0.4203)	0.3247 (0.1510)
Acquired Stockholders	--	1.0000 (0.0000)	-0.1052 (0.6500)	0.1935 (0.4007)
Acquiring Bondholders	--	--	1.0000 (0.0000)	-0.2870 (0.2071)
Acquired Stockholders	--	--	-- (0.0000)	1.0000

* Significance level are in parentheses.

hypotheses, while the bondholders generate negative, but not statistically significant, abnormal returns.

Table 5-9 reports the Spearman correlation coefficients between the average excess returns to the securityholders of the merging firms over the period t_{-10} to t_{10}. The correlation coefficient between the average abnormal returns for the acquiring bondholders and acquiring stockholders is positive (0.1234). It is also positive between acquiring and acquired stockholders (0.1935), which indicates that the returns move into a positive direction, even though the coefficients are not statistically significant. The only group that has a negative correlation with the other groups is the bondholders of the target firm.

A summary of the results of this section indicate that both the stockholders and the bondholders of the acquiring firms gain significantly positive excess returns due to the merger announcement, a finding which is consistent with the information effect hypotheses. the stockholders of the acquired firms gain highly significant excess returns, also consistent with the information effect hypotheses, while the bondholders of the acquired firms generate negative, but not statistically significant, excess returns. No evidence was found to support the wealth transfer hypotheses, either from the stockholders to the bondholders or vice versa.

Table 5-10

Mean of Dependent and Independent Variables for the Target and Bidding Firms Stockholders

	% CAER -20,0	% CAER -1,0	Size	VAR	PER	DER	TQR
Target Variables	21.686	10.600	147.598*	0.0336	11.455	0.534	1.404
Bidders Virables	0.587	0.554	989.060*	0.023	12.956	0.622	2.129
Relative Variables**	---	---	0.345	1.570	1.077	1.140	0.893

* Millions of dollars

**Each relative variables is the ratio of the target to the bidder variable.

Results of the Cross-sectional Models

One important issue we investigate is the determinants of merger gains as explained by different hypotheses. This is done by first constructing a portfolio comparison of the cumulative excess returns from t_{-20} to t_0 for each variable. This is done by dividing the sample of 204 observations (firms) for which information is available on both bidders and targets into five portfolios (from the lowest to the highest) according to the relative variable, while for the pinary variables the comparison of the CER is accomplished by the comparison of cash versus security, conglomerate versus non-conglomerate and pure conglomerate, and the period before 1968 versus the period after 1963. Second, we use the linear model where the dependent variable is defined in two ways: 1) the cumulative excess return from day t_{-20} to t_0, and 2) the cumulative excess returns from day -1 to day zero. The regression procedure is employed for both the stockholders and the bondholders of the merging firms.

This section is divided into four parts. Each part reports the results of the portfolio comparison procedure and the two linear models that explain the returns (using two definitions) to stockholders of the target, stockholders of the bidder, bondholders of the target and bondholders of the bidding firms, respectively.

1. Target Stockholders:

Table 5-10 presents summary information on the discrete independent variables of the models. The data in the table confirm that target firms relative to their bidders and on the average were smaller, more

variable, less leveraged, had smaller market to book value ratio and had lower price-earning ratio.

Table 5-11 presents a comparison of the cumulative excess returns by method of payment, type of merger and regulation. The results show that the mean cumulative excess return is 27.695 percent for cash merger, while it is 16.369 percent for securities exchanges. The difference is statistically significant at the 1 percent level (t-statistic 3.717). Table 5-11 indicates that even though the returns for pure conglomerate mergers, 26.841 percent, is higher than the returns from conglomerate merger, 21.578 percent, and higher than in non-conglomerate mergers, 22.210 percent, the difference is not statistically significant. When we consider the effect of regulation, the results indicate that for the period after 1968 the mean of CER is 23.636 percent, which is higher than 15.681 percent for the period before 1968, and the difference is statistically significant (t-statistic 2.248) at one percent level. This also indicates that regulation has had a positive impact on the returns of the target stockholders.

Table 5-12 presents a portfolio comparison of the cumulative excess returns for each relative variable. The first entry of the table shows that small targets relative to the bidder (RSIZE-portfolio 1) earn higher returns than large targets. The first portfolio, which includes targets with relative size of 0.14-4.47 percent relative to their bidder, has a mean CER of 27.99%, while the mean of CER of the fifth portfolio, which includes large targets relative to their bidder, is

Table 5-11

Cumulative Excess Returns Comparison by Method of Payment, Type of Merger and Regulation for the Acquired Firms Stockholders

	N	Mean of CER -20,0	T-Statistic of the Mean Difference						
			Cash	Securities	Conglom.	Pure Conglom.	Non-Conglom.	Before 1968	After 1968
Method of Payment:									
Cash	96	27.695	----	3.717*	----	----	----	----	----
Securities	90	16.369		----	----	----	----	----	----
Type of Merger:									
Conglomerate	169	21.578			----	-1.622	-0.155	----	----
Pure Conglomerate	71	26.844			----	0.981	----	----	
Non-Conglomerate	35	22.210				----	----	----	
Regulation:									
After 1968	154	23.636					----	2.248*	
Before 1968	50	15.681					----		

*Significant at 0.01 level.

Table 5-12

Cumulative Excess Returns Portfolio Comparison for the Independent Variables to Target Firms Stockholders

Relative Variables	Number of Firms	% of the Relative Variables	Mean of CER -20,0	t-Statistics of the Mean partfolio Portfolio 1	Portfolio 2	Portfolio 3	Portfolio 4	Difference Portfolio 5
RSIZ 1	41	0.14- 4.47	27.999	----	0.966	1.037	1.116	3.498*
RSIZ 2	41	4.54- 11.36	22.793		-----	0.007	0.129	2.432*
RSIZ 3	41	11.44- 24.59	22.758		-----	0.105	2.396*	
RSIZ 4	41	24.94- 54.56	22.226			-----	2.214*	
RSIZ 5	40	55.15-199.28	12.573					
RVAR 1	41	32.60-101.30	11.104	----	-0.772	-3.132*	-3.702*	-4.141*
RVAR 2	41	101.50-135.80	13.945		-----	-2.788*	-3.430*	-3.917*
RVAR 3	41	137.10-164.10	25.792		-----	-0.670	-0.634	
RVAR 4	41	164.20-208.4	29.382			-----	0.109	
RVAR 5	40	210.2 -391.40	28.829			-----		
RTQR 1	41	5.83- 37.69	29.587	----	1.419	3.374*	1.364	1.593
RTQR 2	41	38.49- 65.39	22.084		-----	2.116*	-0.088	0.127
RTQR 3	41	65.69- 80.18	12.084		-----	-2.259*	-2.105*	
RTQR 4	41	80.88-130.46	22.492			-----	-0	
RTQR 5	40	130.52-388.97	21.510			-----		
RPER 1	41	8.02- 50.14	23.056	----	0.190	0.155	0.303	0.695
RPER 2	41	51.14- 78.86	22.039		-----	-0.014	0.107	0.543
RPER 3	41	79.96-104	22.211		-----	0.150	0.575	
RPER 4	41	104.76-154.73	21.506			-----	0.465	
RPER 5	40	156.01-453.72	19.568			-----		
RDER 1	41	1.24- 46.03	17.679	----	-1.438	0.284	-2.317*	-0.599
RDER 2	41	46.59- 72.95	24.408		-----	1.821	-0.932	0.783
RDER 3	41	73.91-117.46	16.525		-----	-2.729*	-0.909	
RDER 4	41	117.89-182.12	29.274			-----	1.662	
RDER 5	40	186.09-438.39	20.516			-----		

* Significance at 0.01 level.

12.573 percent. The difference is statistically significant at one percent level (t-value of 3.498).

Table 5-12 also indicates that as the variability of target increased relative to their bidders, the return to target increased. The mean CER for the first RVAR portfolio is 11.104 percent, while the return is 28.829 for the fifth portfolio. The difference is statistically significant at one percent level (t-value is -4.141). The result also shows that the returns to target firms with low Tobin's Q-ratio (RTQR) relative to the bidder has higher returns, 29.587 percent, while the mean of CER is 21.510 percent for target with high Tobin's Q-ratio relative to their bidders. No significant difference exists between relative price-earning ratio portfolios.

Table 5-13A reports the regression coefficients and t-statistics associated with each variable. Of all the variables used, only four were found to be significant: the variable of the relative variance, relative Tobin's Q-ratio, the variable for pure conglomerate, and the variable for the payment method.

The regression constant of 7.174 percent measures the expected average cumulative excess returns to the target firms from merger when the market value of the target firms is equal to the market value of the bidder, when the variance, price earning ratio, debt equity ratio and Tobin's Q-ratio of both the target and the bidders are equal and when the merger bid occurs after 1968, by securities or combination and the type of merger is conglomerate or non-conglomerate. The comparison of the mean cumulative excess returns of 21.686 percent from Table 5-10 with the constant 7.174 percent indicates that failure to account for

Table 5-13A

The Cross Sectional Model to Target Firms Stockholders
Dependent Variable CER form t-20 thru to

Variable	Regression Coefficient	t-Value		Probability
Intercept	7.174	2.14*	0.0338	0.0338
LRSIZE	- 1.727	-0.60	0.5462	0.5462
LRVAR	35.074	3.85*	0.0002	0.0002
LRPER	1.644	0.32	0.7526	0.7526
LRDER	- 0.343	-0.10	0.9218	0.9218
LRTQR	- 8.172	-1.66**		0.0994
CASH	9.393	3.21*	0.0015	0.0015
PURE-CONGL	7.162	2.38*	0.0181	0.0181
REGUL	- 2.237	-0.65	0.5181	0.5181

R-Square = 21.338%
F-Value = 6.61
PR > F = 0.0001
Number of Observations = 204
* Significance at 5 percent level
**Significance at 10 percent level
The L prefix in the variable symbols indicates the use of logarithmic values for these variables.

these factors may overestimate the returns to target firms from merger. The relative size variables are not significant and even have the wrong sign. This is consistent with Asquith, Bruner and Mullins (1983) in which they found that log of the relative size is not a significant variable to explain the return to target firms stockholders, and it is in contrast to Papaioannou (1984) in which he found this variable is significant and has a positive sign.

The relative variance variable is highly significant (t-value 3.85), and it has a positive sign which implies that the higher the variability of the target relative to the bidder, the higher the returns to target firms from merger. This finding is also supported if we examine Table 5-12. When the relative variance variable is divided into five portfolios (from lowest to highest relative variance), the result indicates that the first portfolio has a mean of CER of 11.104 percent while the fifth portfolio, which includes the highest relative variance, has a mean of CAR of 28.829 percent. The difference is statistically significant between the two (t-value -4.141). The fact that the mean of the relative variance is 1.570 as indicated by Table 5-10 suggests that, on the average, targets have higher variance than the bidder. This finding is not consistent with Galai and Masulis (1976), Shastri (1982) argument of the wealth transfer while it is consistent with the diversification effect hypotheses, and the RVAR variable has the expected positive sign with the CER to target firms. Furthermore, Table 5-13A reveals that neither the relative price-earning ratio nor the relative debt equity ratio is significant in explaining the returns to stockholders of the target firms, which does not give support to the

price-earning ratio or debt capacity hypotheses. The insignificance of the price-earnings ratio relative is in contrast to the findings of Nielsen and Melicher (1973) who reported a positive significant effect on merger premiums. This result is also supported by Table 5-12. The entry concerning relative price earning ratio shows no significant difference between the mean of CER of any portfolio. Also, the entry concerning relative debt equity ratio shows no statistical difference between the mean of CER for portfolios one and five or portfolios two and four.

The relative Tobin's Q-ratio variable turns out to be significant at 10 percent level (t-value 1.66) but it carries the wrong sign. The significance of this variable is consistent with the undervaluation hypotheses, and it is consistent with the findings of Walking and Edmister (1985) and Papaioannou (1984) who found this variable to be significant in explaining the bid premium. We can argue also that this variable would measure the extent of managerial efficiency. More efficient management would produce higher market to book ratios, and inefficiency would cause lower values of this variable and invite takeover.

The cross-sectional model for the target stockholder indicates that the dummy variable for the method of payment is significant at 5 percent level, were cash mergers are associated with higher CER to target stockholders than other methods of payment. This result is supported also by

the results from Table 5-11 where the mean of CER of cash mergers is 27.695 percent while the corresponding value is 16.369 percent for securities exchange. The t-statistic for the mean difference is 3.717, which is significant at the five percent level. These results are consistent with the findings of Wansley, Lane and Yang (1983) were they found that cash mergers provide higher returns than security mergers for the stockholders of the target firms. The difference is attributed to the accounting and the tax treatment of mergers.

The dummy variables for merger types, which differentiate between pure conglomerate versus all other types is significant at one percent level. It indicates that pure conglomerate are associated with higher returns to stockholders of the target firms. This finding is supportive of Lewellen's (1971) argument that financial benefits will result from mergers and are more likely to be related to conglomerate mergers than non-conglomerates. The finding also is in contrast to Schall (1972) and Rubenstein (1973) argument that in the absence of real synergies, mergers will not affect the value of the firms. This result is consistent with Elgers and Clark (1982) who found that higher returns are associated more with pure conglomerates than non-conglomerates, while Wansley, Lane and Yang (1983) found no significant difference between the two types of mergers.

The last variable included to measure the effect of regulation indicates that regulation has a positive impact on the returns to target stockholders, even though the variable is not significant. It has the correct sign as hypothesized. Also, Table 5-11 produces significant

Table 5-13B

The Cross sectional Model to Target Firms Stockholders
Dependent Variable CER from t-1 thru t_0.

Variables	Regression Coefficient	t-Value	Probability
Intercept	2.905	1.05	0.2935
LRSIZE	-3.180	-1.36	0.1770
LRVAR	7.123	0.95	0.3425
LRPER	-5.574	-1.30	0.1942
LRDER	-3.673	-1.28	0.2025
LRTQR	-2.845	-0.70	0.4835
CASH	5.905	2.46*	0.0148
PURE-CONGL	2.324	0.94	0.3474
REGUL	-3.003	-1.06	0.2915

R-Square = 8.907%
F-Value = 2.38
PR > F = 0.018
Number of Observations = 204
*Significance at 5 percent level
The L prefix in the variable symbols indicate the use of logarithmic values for these variables.

Table 5-14

Distribution of the Cumulative Excess Returns to Stockholders and to the Bondholders of the Merging Firms by the Announcement Year

Year	Stock Returns Average CER from t-20 thru t_0		Bond Returns Average CER from t-20 thru to	
	Target	Bidder	Target	Bidder
63	12.336	-0.611	------	-3.082
64	19.045	0.143	------	-0.089
65	11.006	0.672	0.518	-0.0104
66	14.319	-1.350	------	0.353
67	15.539	0.936	2.534	-0.883
68	10.407	2.067	-3.000	3.067
69	13.619	4.827	0.625	-2.209
70	23.295	4.299	0.833	0.350
71	9.285	1.221	------	0.001
72	23.973	-0.944	0.485	0.349
73	18.289	3.320	-0.493	-0.604
74	39.519	2.828	2.182	1.189
75	23.481	-0.748	------	6.098
76	19.103	-1.943	------	0.286
77	33.274	-2.948	0.085	2.704
78	32.093	-0.999	-2.321	-0.2503
79	27.945	2.916	-1.042	0.728
80	10.976	3.741	0.787	2.173
81	19.285	-0.980	4.693	0.761
82	24.927	3.211	------	-0.776

*No bonds in this year for the target firms.

results when the effect of regulation is considered by itself. The period after 1968 has a mean of CER of 23.636 percent while that of the period before 1968 is 15.681 percent. The mean difference is statistically significant with t-value of 2.248. These results are consistent with Jarrell and Bradley (1980) who found that the premium paid to regulated targets is higher than unregulated targets. This finding also gives support to the arguments that the returns from mergers are changing over time. To provide more evidence about this point, we include Table 5-14, which presents a distribution of the cumulative excess returns to stockholders and bondholders of the merging firm. Visual inspection of the table shows that the CER is changing over time. This finding is consistent with Asquith, Bruner and Mullins (1983) who found this variable to be significant and it also has the same sign.

The cross-sectional model to stockholders of the target firms explains 21.34 percent of the cumulative excess returns. The overall model has F-value of 6.61 which is significant at 0.01 percent level. It produces four significant variables: relative variance, relative Tobin's Q-ratio, dummy variables for payment method and merger type.

The second model in Table 5-13B, which uses the CER from day -1 to day 0, shows that the dummy variable for the method of payment is the only significant variable. The model has R-square of 8.907 percent, and the overall model has F-value of 2.38, which is significant at 5 percent level.

2. Bidder Stockholders

Table 5-15 presents a cumulative excess return comparison by the method of payment, type of merger and the effect of regulation. The first panel shows that cash mergers are associated with higher mean CER (1.167%) relative to securities exchange (0.491%), but the difference is not statistically significant. Table 5-15 also indicates that the mean CER from t_{-20} thru t_0 for pure conglomerate merger is 3.464 percent relative to 1.017 percent for conglomerate merger. The difference is statistically significant at the 5 percent level. Pure conglomerate is also associated with higher mean CER relative to non-conglomerate of -1.490 percent. The difference is statistically significant at one percent level (t-value of 2.163). The result of regulation effect is not consistent with the hypothesized effect. It indicates that for the period after regulation the bidder firms mean CER is positive, 1.338 percent, while it is -1.728 for the period before 1968.

Table 5-16 presents a portfolio comparison of the mean CER where each relative variable is divided into five portfolios (from the lowest to the highest percentage). The comparison among the portfolios of the relative size indicated that as the relative size of the target to bidder increased, the mean CER to the bidder also increased. The mean CER for the second portfolio is -1.398, while it is 3.540 for the fifth portfolio. The difference is statistically significant at the one percent level (t-value of -2.075).

The classification by relative variance shows no significant difference between any two portfolios, even though the first portfolio is associated with mean CER of 2.792 percent which is higher than the

Table 5-15

Cumulative Excess Returns Comparison by Method of Payment, Type of Merger and Regulation for the Acquiring Firms Stockholders

Difference	N	Mean of CER -20,0	T-Statistic of the Mean						
			Cash	Securities	Conglom.	Pure Conglom.	Non-Conglom.	Before 1968	After 1968
Method of Payment:									
Cash	96	1.167	----	0.529	----	----	----	----	----
Securities	90	0.491		-----	----	----	----	----	----
Type of Merger:									
Conglomerate	169	1.017		----		-1.656**	1.326	----	----
Pure Conglomerate	71	3.464				-----	2.163*	----	----
Non-Conglomerate	35	-1.490					-----	----	----
Regulation:									
After 1968	154	1.338						----	1.858**
Before 1968	50	-1.728							-----

* Significance at 0.01 level.
**Significance at 0.05 level.

Table 5-16

Cumulative Excess Returns Portfolio Comparison of the Independent Variables toBidder Firm Stockholders

Relative Variables	Number of Firms	% of the Relative Variables	Mean of CER -20,0	t-Statistics of the Mean Difference				
				Portfolio 1	Portfolio 2	Portfolio 3	Portfolio 4	Portfolio 5
RSIZ 1	41	0.14- 4.47	0.731	----	1.167	-0.053	-0.099	-1.115
RSIZ 2	41	4.54- 11.36	-1.398		-----	-1.315	-1.095	-2.075*
RSIZ 3	41	11.44- 24.59	0.831			-----	-0.058	-1.119
RSIZ 4	41	24.94- 54.56	0.958				-----	-0.936
RSIZ 5	40	55.15-199.28	3.540					-----
RVAR 1	41	32.60-101.30	2.792	----	0.637	0.819	1.089	0.994
RVAR 2	41	101.50-135.80	0.983		-----	0.194	0.608	0.469
RVAR 3	41	137.10-164.10	0.636			-----	0.518	0.351
RVAR 4	41	164.20-208.40	-0.227				-----	-0.162
RVAR 5	40	210.2 -391.40	0.069					-----
RTQR 1	41	5.83- 37.69	0.624	----	0.119	1.174	-0.712	-1.582
RTQR 2	41	38.49- 65.39	0.356		-----	1.365	-0.966	-1.462
RTQR 3	41	65.69- 80.18	-1.924			-----	-2.104*	-1.824**
RTQR 4	41	80.88-130.46	2.453				-----	-0.412
RTQR 5	40	130.52-383.97	3.455					-----
RPER 1	41	80.2 - 50.14	-1.911	----	-1.283	-1.548	-1.681**	-1.949**
RPER 2	41	51.14- 78.86	0.539		-----	-0.243	-0.619	-0.292
RPER 3	41	79.96-104.0	1.045			-----	-0.419	-0.057
RPER 4	41	104.76-154.73	2.106				-----	0.360
RPER 5	40	156.01- 45.72	1.169					-----
RDER 1	41	1.24- 46.03	0.433	----	-1.520	0.737	-0.069	-0.056
RDER 2	41	46.59- 72.95	4.614		-----	2.580*	1.733*	1.695**
RDER 3	41	73.91-117.46	-1.219			-----	-1.085	-1.013
RDER 4	41	117.89-182.12	0.593				-----	0.016
RDER 5	40	186.09-438.39	0.564					-----

* Significance at 0.01 level.
**Significance at 0.05 level.

fifth portfolio mean CER of 0.069 percent. The classification by relative Tobin's Q-ratio and relative price-earning ratio shows the same pattern of mean CER, from t_{-20} thru t_0, as the percentage increases, but that pattern does not exist for the relative debt equity ratio.

The regression coefficients and t-statistics are reported in Table 5-17A where the dependent variable is the cumulative excess returns of day -1 and day 0. The second model is reported in Table 5-17B where the dependent variable is the cumulative excess returns from day -20 today 0. The regression constant of 1.329 percent measures the expected average cumulative excess returns for a merger bid when the size of the target firms is equal to the size of the bidder, when the variance, price-earnings ratio, Tobin's Q-ratio, and debt equity ratio for both the bidder and the target are equal and when the bid occurs before 1968. The expected average cumulative excess returns for the bidder firms is positive and statistically significant at 0.01 level (t-value of 2.52).

The estimated size coefficient measures the relationship between the log of the firm's relative size and the cumulative excess returns to the bidding firm. The log of the relative size (LRSIZE) has a positive sign, and it is significant at 10 percent level. This means that as the relative size of the target to the bidder increased, the cumulative excess returns increased. This result is also supported by Table 5-16. The first and second portfolios are associated with mean CER of 0.731 and -1.398 percent respectively, while the fourth and fifth portfolios' mean CERs are 0.958 and 3.540 percent, respectively. The difference between the second and fifth portfolios is statistically significant (t-value of -2.075).

Table 5-17A

The Cross Sectional Model to the Bidding Firms Stockholders
Dependent Variable CER from t-1 thru t0

Variables	Regression Coefficient	t-Value	Probability
Intercept	1.329	2.52*	0.0125
LRSIZE	0.758	1.69**	0.0925
LRVAR	-2.137	-1.49	0.1370
LRPER	-0.723	-0.88	0.3774
LRDER	0.620	1.13	0.2604
LRTQR	-0.653	-0.84	0.4003
CASH	-0.075	-0.16	0.8697
PURE-CONGL	1.277	2.71*	0.0074
REGUL	-1.334	-2.46*	0.0149

R-Square = 12.309
F-Value = 3.42
PR > F = 0.0010
Number of Observations - 204
* Significance at 5 percent level
**Significance at 10 percent level
The L prefix in the variable symbols indicates the use of logarithmic values for these variables.

The sign and the significance of this variable is consistent with the Asquith, Bruner and Mullins (1983) finding of a positive relation between the relative size and the cumulative excess returns. They explain that under the assumption that mergers benefit the acquiring firms, then large mergers should show up as having larger returns to acquiring firms. Roll (1984) argues that this positive relation between relative size and CER "... is consistent with the bidding firm losing on average, but losing less the larger the targets" (Roll, 1984, p. 23).

This finding is at least not consistent with the managerialism theory as a motive of merger since size has a positive, not a negative, impact on the returns to bidding firm's stockholders.

The cross-sectional model shows that relative variance variable is not significant. This is also supported by the results of Table 5-16 where the relative variable portfolios do not show any significant difference between the mean CER of any two portfolios. The relative price earning ratio is not significant, and it carries the wrong sign. This is additional evidence on Lintner's (1971) argument that the market evaluates the combined earnings of the two firms at a higher price earning ratio than that of the acquiring firms, so the increase in earnings per share from PER differences will tend to raise the stockholders' assessments of the future earnings. This will lead to an increase in the market value of both firms' securities. This argument is not supported either by the sign or the significance of the LRPER variable. The relative debt equity ratio variable has a positive sign,

as predicted, but it is not significant. Also, the variable of relative Tobin's Q-ratio is not significant. This implies that debt capacity and the undervaluation hypotheses is not a valid argument to explain the return to stockholders of the bidding firms. The dummy variable for the method of payment is not significant. This result is supported by the results of Table 5-15 which indicates that even though the mean CER for cash merger is 1.167 percent which is higher than 0.491 percent for the securities exchange mergers, the difference is not statistically significant.

The dummy variable for merger type is significant at 0.007 level (t-value of 2.71), and it carries the correct sign. This finding is supported by Table 5-15, which indicates that there is a statistically significant difference between the mean CER for pure conglomerate mergers, 3.464 percent, and non-conglomerate mergers, -1.490 percent. The mean difference is statistically significant (t-value of 2.163). The table also shows that pure conglomerate mergers are associated with higher mean CER, 3.464 percent, than all conglomerate mergers, 1.017 percent. The difference is statistically significant (t-value of 1.656). This result supports Lewellen's (1971) arguments and it contradicts Schall's and Rubenstein's (1973) arguments which were explained before. The result concerning merger type is also consistent with Elgers and Clark (1980) and Wansley, Lane and Yang (1983).

The last variable, REGUL, which was used as a proxy to capture the effect of regulation, is significant (t-value of -2.46). This is also supported by the results of Table 5-16 which indicates that for the

period after regulation, the mean CER for the bidding firm is higher (1.338 percent) than the period before regulation (-1.728 percent). The mean difference is statistically significant (t-value of 1.858). This finding is not consistent with Jarrell and Bradley (1980) and Schipper and Tompson (1983) who found that regulatory changes had significantly adverse impact on shares values of acquiring firms even though the difference between this result and theirs is not clear. One possible explanation is that over the period from 1968 (the year when the regulation was imposed) and 1982, many factors could have affected the returns to bidding firms' stockholders that may have cancelled the negative impact of the regulation. This result is also consistent with the large number of mergers occurring during 1976 and 1977, which suggest that regulation does not have an adverse effect on the returns to stockholders of the bidding firms.

Table 5-17B presents the cross-sectional model for the bidding firms' stockholders when the cumulative excess returns from t_{-20} to t_0 is used as dependent variable. The results show that only relative variance and the dummy variable for merger type is significant. The first model table (5-17A) is more powerful since it explains 12.31 percent of the cumulative excess returns. It has F-value of 3.42, which is significant at 0.10 percent level, relative to R-square of 9.971 percent and F-value of 2.7 for the second model.

To examine the overpayment hypothesis, which implies that the bidder overpay for the security of the targets, the first model in Table 5-17A is modified to include the returns for the target as independent variables. As the hypotheses implies, the return to target should be

Table 5-17B

The Cross Sectional Model to Bidding Firms Stockholders
Dependent Variable CER from t-20 thru t0

Variables	Regression Coefficient	t-Value	Probability
Intercept	1.089	0.65	0.5146
LRSIZE	- 0.469	-0.680	0.4956
LRVAR	-12.077	-2.67*	0.0083
LRPER	0.402	0.16	0.8766
LRDER	- 0.238	-0.14	0.8912
LRTQR	2.854	1.16	0.2459
CASH	0.719	0.50	0.6210
PURE-CONGL	4.105	2.75*	0.0065
REGUL	- 2.814	-1.64	0.1030

R-Square = 9.971%
F-Value = 2.70
PR > F = 0.0077
Number of Observations = 204
*Significance at 5 percent level
The L prefix in the variable symbols indicates the use of logarithmic values for these variables.

Table 5-17C

The Cross Sectional Model to Bidding Firms Stockholders Where RETT1, CAR from t-1 thru t0, Dependent Variable CER from t-1 thru t0.

Variables	Regression Coefficient	t-Value	Probability
Intercept	1.310	2.47*	0.0142
RETT1	0.006	0.48	0.6322
LRSIZE	0.779	1.73**	0.0859
LRVAR	-2.184	-1.52	0.1303
LRPER	0.687	-0.83	0.4049
LRDER	0.644	1.17	0.2452
LRTQR	-0.635	-0.82	0.4155
CASH	-0.114	-0.24	0.8070
PURE-CONGL	1.262	2.66*	0.0084
REGUL	-1.314	-2.41*	0.0169

R-Square = 12.413
F-Value = 3.06
PR > F = 0.0020
Number of Observations = 204
* Significant at 5 percent level
**Significant at 10 percent level
The L prefix in the variable symbols indicates the use of logarithmic values for these variables.

negatively related to the returns of the bidder, which implies that the independent variable (RETT1) should have a negative sign and significant. Table 5-17C presents the estimated model when the returns to target are included as dependent variable. The model produces the same results as the model in Table 5-17A. The variable (RETT1) has a positive sign, and it is not significant which contradicts overpayment hypotheses by the bidding firms.

Target Bondholders

Table 5-18A presents the cross-sectional model for the bondholders of the target firms when the returns are calculated as the change in prices or $[(P_{-10} - P_0)/P_{-10}]$, where P_{-10} is the price ten days before the announcement and P_0 is the announcement price. The model does not include the dummy variables. This is due to the small number of observations. The model also does not include relative Tobin's Q-ratio because it is highly correlated with the debt equity ratio.

Table 5-18A shows that the regression constant of -6.556 percent is significant at 0.01 percent level. This measures the expected average excess returns for a merger bid when the independent variables are held constant. The relative variance variable is significant and has a positive sign as hypothesized, which gives support to the diversification effect hypotheses. The relative debt-equity ratio variables also turns out to be significant (t-value of 2.19) and it has a positive sign as predicted by Table 2-2. This result is consistent with arguments of Lintner (1971) and Levy and Sarnat (1970), when they argue that joining together less than perfectly correlated income

Table 5-18A

The Cross Sectional Model to Target Firms Bondholders
dependent Variable CER from t-1 thru t0.

Variables	Regression Coefficient	t-Value	Probabilities
Intercept	-6.556	-5.01*	0.0001
RSIZE	0.373	0.46	0.6490
RVAR	1.197	1.76**	0.0937
RPER	2.788	3.81*	0.0011
RDER	1.336	2.19*	0.0405

R-Square = 58.293%
F-Value = 6.99
PR > F = 0.0011
Number of Observations = 25
* Significance at 5 percent level
**Significance at 10 percent level.

streams through merger will reduce the lenders risk. This will lead to an increase in the market value of the merging firm's securities. This finding is also consistent with the argument that merger will reduce the borrowing costs as a result of increasing the size, which will be reflected in terms of positive excess returns to the merging firms securityholders. The relative price-earning variable is significant (t-value of 3.81) and it has a positive sign as hypothesized in Table 2-2, while the relative size variable, even though it has a positive sign as predicted, is not statistically significant.

The first model in Table 5-18A explains 58.293% of the variation. It has F-value of 6.99 which is significant at 0.11 level. The second model produces one significant variable, the relative debt equity ratio. It has R-square of 17.745 percent, but it has a low F-value of 1.08 which is not significant.

Bidders Bondholders

Table 5-19A presents the cross-sectional model to bidding firms when the returns are defined as the change in prices from t_{-10} to t_0. The model shows that it does not have explanatory power nor is any of the explanatory variable significant. Table 5-19B presents the cross-sectional model when the excess returns of day -1 and day zero, used as dependent variables. The model indicates that the relative variance variable is significant at 5 percent level. The relative debt equity ratio is also significant, the two variable has a positive sign as predicted in Table 2-2.

Table 5-18B

The Cross Sectional Model to Target Firms Bondholders
Dependent Variables is [(P-10 - P0)/P-10]

Variables	Regression Coefficient	t-Value	Probabilities
Intercept	-1.798	-1.73**	0.0995
RSIZE	-0.69	-1.08	0.2950
RVAR	0.101	0.19	0.8545
RPER	0.821	1.41	0.1743
RDER	0.847	1.75**	0.0963

R-Square = 17.745%
F-Value = 1.08
PR > F = 0.3934
Number of Observations = 25
**Significance at 10 percent level.

The significance of relative variance variable is consistent with the diversification effect hypotheses, while the significance of relative debt-equity ratiois consistent with the leverage effect hypotheses developed in Chapter 2. The model explains 21.09 percent of the variability and it has F-ratio of 3.27 which is significant at 0.018 level.

Table 5-19A

The Cross Sectional Model to Bidding Firms Bondholders
Dependent Variable is CER from t-1 thru t0

Variables	Regression Coefficient	t-Value	Probability
Intercept	0.309	0.16	0.8723
RSIZE	-0.062	-0.04	0.9689
RVAR	-0.130	-0.15	0.8782
RPER	-0.273	-0.58	0.564
RDER	0.448	0.69	0.493

R-Square = 3.152%
F-Value = 0.40
PR > F = 0.8085

Table 5-19B

The Cross Sectional Model to Bidding Firms Bondholders
Dependent Variable is [(P-10 - P0)/P-10]

Variables	Regression Coefficient	t-Value	Probability
Intercept	-2.334	-1.89*	0.0645
RSIZE	1.002	0.99	0.3283
RVAR	1.168	2.14*	0.0375
RPER	0.094	0.32	0.7467
RDER	0.702	1.67**	0.0030

R-Square = 21.090
F-Value = 3.27
PR > F = 0.0186
* Significant at 5 percent level
**Significant at 10 percent level

CHAPTER 6

CONCLUDING REMARKS

This final chapter of the study covers concluding remarks. The conclusions drawn from the results and the implications of the study are considered in the first section. The second section is a discussion of the limitations. The final section includes some suggestions for future research.

Conclusion and Implications

The objective of the first part of this study is to re-examine the returns of the four classes of security holders around the announcement of completed mergers. Examination of the returns to target stockholders indicates that there is a large positive excess return earned by the stockholders of the acquired firms on the day of the merger announcement and the day before. The average excess returns on day zero is 4.82 percent with a t-statistics of 7.47. On day -1, the average excess returns is 4.31 percent with t-statistic of 8.89. The cumulative excess returns from t_{-20} through the merger announcement day, t_0, is 19.59 percent. The result also indicates that there is a large positive excess return for the period immediately prior to the announcement date. This pattern of abnormal returns is explained by the leakage of information about the merger before it appears in the Wall Street Journal, but

still the excess returns on day t_0 and t_{-1} dominate all other daily returns.

The results of the bidding firms stockholders shows that there is little market reaction on the announcement day, even though the two-day excess returns are 0.31 percent, which is significant at the 0.01 level. The t-statistic is 2.48 for the portfolio of two days announcement. Over the entire 41-day period, the stockholders of the bidding firms earn 1.21 percent which is statistically significant at 0.01 level with a t-statistic of 2.3.

To examine the returns to target bondholders from merger, the average abnormal returns were generated using the mean adjusted returns model, for ten days before to ten days after merger announcement. The results indicate that there are twelve days with negative returns versus nine days of positive returns, and the largest significant returns occur on day zero where the average abnormal return is -0.66 percent, with a t-statistic of 2.364, which is statistically significant at 0.01 level. The cumulative average abnormal return for day t_{-1} and day zero is -0.701 percent with a t-statistic of -1.778 which not significant at 0.01 level. The cumulative excess returns from t_{-10} to t_{-2} is -0.209, while it is 0.667 for the period from t_{+2} to t_{+10}. These results indicate that target bondholders do not gain from mergers and a likely explanation to the small negative insignificant returns is because of the loss of assets that serve as collateral to secure their debt. The loss of collateral occurs because whether they are secured or unsecured, bondholders have a priority in the event of default only to assets owned by the target. The second reason is that when the bidding firms

considers the payment to bondholders of the target, they consider the present value of the amount to be paid in the future. If the bonds have been issued at an interest rate that is substantially below the present effective rate for a similar security, then the price will decrease and the returns will be negative to the target bondholders. The result to target bondholders is not consistent with the wealth transfer hypotheses and does not give support to the argument that bondholders share some of the synergy with shareholders.

Unlike target bondholders, the results to bidding firms bondholders indicate that the largest average abnormal returns of 0.689 percent occurred at day t_{-1}, and it is statistically significant with a t-statistic of 4.65. The cumulative average excess returns during day t_{-1} and t_0 shows an average excess return of 0.859 percent with a t-statistic of 4.095. Over the 21 day period, bidding firms bondholders earn 1.912 percent with a t-statistic of 2.812. This finding is consistent with the information effect hypotheses about merger and the concept that bondholders share some of the synergy with the shareholders. The evidence does not support the transfer hypotheses as a result of the diversification or the incentive effect.

The second objective of this study is to identify the source of gains or losses to each group of security holders. This involved the estimation of a cross-sectional regression model for each of the four groups of security holders. The dependent variable for the stockholders of the merging firms is defined in two ways: 1) the cumulative excess returns for day -20 to day zero and 2) the cumulative excess returns from day -1 to day zero. While the independent variables include the

log of relative size, relative variance, relative price-earnings ratio, relative debt equity ratio and relative Tobin's Q-ratio, the model also includes a dummy variable for method of payment, type of merger and the effect of regulation. A portfolio comparison procedure is performed by sorting each of the relative variables from the highest to the lowest value. Then the total sample is divided into five portfolios. Then we examine the mean difference between the mean of the cumulative excess returns for each portfolio. The results for each group of security holders can be summarized by the following:

A. Target Stockholders

The cross-sectional model to the target firms stockholders indicate that relative variability, relative Tobin's Q-ratio and the dummy variables for method of payment and type of merger are significant variables to explain the excess returns to target stockholders. The model explains 21.338 percent of the variability and it has F-value of 6.61, which is significant at the 0.01 percent level.

The significance of the relative variance is supported also by the portfolio comparison procedure since the mean difference between the first and the fifth mean CER portfolios is statistically significant (t-value of -4.141), a result which is consistent with the diversification effect hypotheses. The significance of Tobin's Q-ratio is in support of the undervaluation hypotheses, while the significance of the dummy variables for method of payment and type of merger imply that cash mergers are associated with higher cumulative excess returns than security exchange and that pure conglomerate is associated with

higher returns than other types of mergers. This implies that financial benefits will result from mergers and are more likely to be related to pure conglomerate than non-conglomerate mergers.

The variables of relative size, relative price earning ratio, and relative debt equity are not significant, which implies that the price earning ratio and debt capacity hypotheses are not supported by the cross-sectional model, even though the RPER variable has the predicted sign.

B. Bidder Stockholders:

Results of the cross-sectional regression model to bidding firms stockholders indicates that relative size variable is significant. This implies that bidding firms earn higher return by acquiring large targets relative to their firms than if they acquire small targets. This finding is not consistent with managerialism hypotheses. The positive relationship may be justified on the basis that large firms are able to pay a premium for the stock of small firms since they will be able to discount the same cash flows at a smaller discount rate. The second significant variable is the dummy variable for merger type, which implies that pure conglomerate mergers are associated with higher cumulative excess returns than non-conglomerate mergers. Thus, financial benefits may result from a merger, and more likely to be related to pure conglomerate mergers than non-conglomerate mergers. This conclusion is supported also by the portfolio comparison where the mean CER

for conglomerate merger is 3.464 percent relative to -1.490 percent for non-conglomerate. The mean difference is significant with t-value of 2.163.

The dummy variable of the regulation effect is significant, but has the wrong sign. It indicates that the cumulative excess returns after 1968 is higher than the cumulative excess returns before 1968. This indicates that regulation does not have an adverse impact on the bidder stockholders. The independent variables of relative variance, relative price earning ratio, relative debt equity ratio, relative Tobin's Q-ratio and the dummy variable for the method of payment are not significant. The model explains 12.309 percent of the variation, and it has F-value of 3.42, which is significant at 0.10 percent level.

C. Target Bondholders:

Results to target firms bondholders show that relative variance, relative debt equity ratio, and relative price-earning ratio are significant variables. The regression constant of -6.556 percent, which measures the expected average excess returns, implies that failure to account for the variables which are included in the model leads to an overestimate of the return to the target bondholders. The significance of the relative variance with the positive sign as predicted, gives support to the diversification effect hypotheses, while the significance of relative debt equity ratio variable implies that, since debt equity ratio of the target is greater the debt equity ratio of the bidder, merger will produce a leverage ratio which is greater than bidder debt

equity ratio but less than target debt equity ratio. This implies that target bondholders will experience reduction in the risk of default, and the market value of their bonds will increase, an argument which is consistent with the leverage effect hypotheses. The cross-sectional model explains 58.293 percent of the variation, and it has F-value of 6.99 which is significant at 0.11 percent level.

D. Bidders Bondholders:

The cross-sectional model to bidding firms bondholders when the dependent variable is defined as the sum of the excess returns of day t_{-1} and zero, indicates that the relative variance and the relative debt equity ratio is significant which gives support to the diversification and leverage effect hypotheses respectively. The constant of -2.334 percent indicates that the expected average excess return is significantly negative when we consider the variables in the model. The model explains 21.090 percent, and it has F-value of 3.27 which is significant at 1.86 percent level.

Limitations

Most empirical work makes some compromises and assumptions. There are a number of assumptions which have become conventional in finance literature. Although these assumptions might make us commit some biases, in order to make the empirical work possible, we have to live with them. A number of conventional assumptions were made, when needed, in this study.

Bonds are characterized by the infrequency of trading. Hence, the problem of missing data, during some trading days, is a limitation facing any researcher wanting to utilize bond market daily data. In the meanwhile, corporate bond data is a hand collecting activity. Therefore, neither a long observation period nor a relatively large sample can be chosen.

Another issue is the use of the market model to generate residual around the announcement day. The existence of empirical evidence suggests that the residual from the market model could be related to other anomalies like variance, size, price-earning ratio, which is the same variable used in this study and in most of the cross-sectional studies to justify the abnormal returns to the merging firms. Thus, if one or more of these variables turns out to be significant. it is difficult to conclude that the significance of specific variable is due to the fact that it justifies the excess returns to the merging firms or because of the market model is misspecified. The results of this study may only be valid for completed mergers, and it may not be the same for all merger announcements when the merger is not completed.

Finally, daily bond prices are available only for those firms which have their bond issues listed in either NYSE or ASE. Since not as many bond issued as common stocks are listed in NYSE or ASE, a long study period must be chosen to have a reasonable sample. But the longer the study period, the higher the costs of collecting data.

Suggestions for Future Research

An extension of this study is to examine the impact of merger announcement on other security holders, namely convertible and nonconvertible preferred stock and convertible bonds. Hence, we suggest this extension.

Even though most of the empirical work is concerned about the gain to stockholders of the merging firms, the cost associated with merger is neglected. Taking this cost into consideration would lower the gain to the merging firms, especially to the bidders firms.

The use of Arbitrage Pricing Model (APM) instead of the market model, to generate the abnormal performance around the event date may provide better estimate of the excess returns since there is a controversy whether or not the capital asset pricing model is misspecified.

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Appendix A

Bond Sample of the Acquiring and Acquired Firms Associated with Announcements

	Company Name	Announcement Day	Coupon	Maturity
		Acquiring Bonds Issues		
1.	Bangor Punta Corp.	19 Apr 1968	5.750	1992
2.	Ashland Oil Inc.	23 Oct 1980	11.100	2004
3.	Ashland Oil Inc.	23 Oct 1980	4.750	1993
4.	Borden Inc.	08 Dec 1970	4.375	1991
5.	Borden Inc.	08 Dec 1970	2.875	1981
6.	Bendix Corporation	14 Dec 1979	9.250A	1981
7.	Bendix Corporation	14 Dec 1979	9.350B	1981
8.	Westinghouse Elec.	30 Sep 1970	5.375	1992
9.	Atlantic Richfield	17 Sep 1965	2.625	1966
10.	Warner Communication	26 Dec 1980	9.125	1996
11.	General Elect Co.	16 Mar 1976	8.650	1984
12.	General Elect Co.	16 Mar 1976	7.125	1978
13.	General Elect Co.	16 Mar 1976	7.000A	1980
14.	General Elect Co.	16 Mar 1977	7.000B	1979
15.	General Mills	28 Oct 1977	8.875	1995
16.	Exxon Corp.	25 May 1979	6.500	1998
17.	Sears Robuck	29 Sep 1969	6.375	1993
18.	Sears Robuck	29 Sep 1969	4.750	1983
19.	Sears Robuck	29 Sep 1969	5.000	1982
20.	Sears Robuck	29 Sep 1969	4.625	1972

	Company Name	Announcement Day	Coupon	Maturity
		Acquiring Bonds Issues		
21.	Armour	02 Apr 1965	5.000	1984
22.	Armour	02 Apr 1965	4.500	1983
23.	Standard Oil Corp.	13 Mar 1981	4.500	1983
24.	Standard Oil Corp.	13 Mar 1981	6.000	1998
25.	Standard Oil Corp.	13 Mar 1981	6.000	1989
26.	Allied Corp.	04 Jan 1982	5.200	1991
27.	Allied Corp.	04 Jan 1982	6.600	1993
28.	Allied Corp.	04 Jan 1982	7,875	1996
29.	Allied Corp.	04 Jan 1982	8.375	1983
30.	American Can	28 Sep 1967	6.000	1997
31.	American Can	28 Sep 1967	3.750	1988
32.	American Can	28 Sep 1967	4.750	1990
33.	Holiday Inn Inc.	04 Sep 1979	9.500	1995
34.	L.T.V. Corp.	08 May 1968	5.000	1988
35.	L.T.V. Corp.	08 May 1978	5.750	1965
36.	Exxon Corp.	25 May 1979	6.000	1979
37.	Interlake Inc.	14 Nov 1975	8.800	1996
38.	Kennecot Corp.	16 Nov 1977	7.875	2001
39.	Northwest Inds. Inc.	27 Jan 1976	7.500	1994
40.	Northwest Inds. Inc.	14 Mar 1973	7.500	1994
41.	Lear Siegler Inc.	16 Dec 1976	10.000	2004
42.	Norton Simon Inc.	15 Jun 1977	6.000	1998
43.	Signal Cos. Inc.	01 Mar 1978	8.850	1994

	Company Name	Announcement Day	Coupon	Maturity
		Acquiring Bonds Issues		
44.	Sinclair Oil Corp.	07 May 1964	4.600	1988
45.	American Brands	14 Jan 1966	3.250	1977
46.	American Brands	14 Jan 1966	3.000	1969
47.	Continental Oil	13 Oct 1965	4.500	1991
48.	Union of Calif.	15 Feb 1965	4.875	1986
49.	Celanese Corp.	18 Aug 1964	3.000	1965
50.	National Steel	20 Apr 1971	3.125	1982
51.	Gulf and Western	14 Mar 1974	6.000	1988
52.	Gulf and Western	14 Mar 1974	7.000A	2003
53.	Gulf and Western	14 Mar 1974	7.000B	2003
54.	Atlantic Richfield	17 Mar 1976	7.000	1976
55.	Atlantic Richfield	17 Mar 1965	8.625	2000
56.	Atlantic Richfield	17 Mar 1976	7.000	2000
57.	National Steel	20 Apr 1971	4.625	1989
58.	Rockwell Int. Corp.	15 Aug 1973	8.500	1995
59.	Norton Simon	09 Nov 1972	6.000	1998
60.	North Am. Rockwell	31 Oct 1972	7.300	1977
61.	Sears Robuck	13 Apr 1964	4.750	1983
62.	Sears Robuck	13 Apr 1964	5.000	1982
63.	Sears Robuck	13 Apr 1964	4.625	1972
64.	Sears Robuck	13 Apr 1964	4.625	1977

	Company Name	Announcement Day	Coupon	Maturity
		Acquired Bonds Issues		
1.	Lorillard Corp.	06 Sep 1968	6.625	1993
2.	Harrahs Un Inc.	04 Apr 1979	9.500	1996
3.	Gamble Skogmo	19 Jun 1980	10.000	1989
4.	Ekco Produ.	19 Jul 1965	4.600	1987
5.	Carrier Corp.	19 Sep 1978	7.750	1998
6.	Carborundum Co.	16 Nov 1977	5.750	1988
7.	Carborundum Co.	16 Nov 1977	9.125	2022
8.	Carborundum Co.	16 Nov 1977	8.100	2003
9.	American Invt. Co.	04 Aug 1980	8.750	1989
10.	Lykes	16 Jan 1978	7.500A	1994
11.	Lykes	16 Jan 1978	7.500B	1994
12.	Lykes	16 Jan 1978	11.000	2000
13.	Marcor Inc.	06 Aug 1974	6.500	1988
14.	Marathon Oil Co.	20 Nov 1981	8.500	2006
15.	Marathon Oil Co.	20 Nov 1981	7.650	1983
16.	Marathon Oil Co.	20 Nov 1981	10.250	1987
17.	Sinclair Oil Corp.	01 Nov 1968	4.600	1988
18.	Standard Packaging	30 Apr 1970	6.000	1990
19.	American Teleco.	07 Apr 1978	3.250	1984
20.	American Teleco.	07 Apr 1978	4.375	1985
21.	American Teleco.	07 Apr 1978	2.625	1968
22.	American Teleco.	07 Apr 1978	3.875	1990
23.	Colorado Interstate	10 Jul 1972	8.500	1991

	Company Name	Announcement Day	Coupon	Maturity
		Acquiring Bonds Issues		
24.	Baldwin Montrose	28 Dec 1967	7.100	1972
25.	Baldwin Montrose	28 Dec 1967	6.250	1987
26.	Essex International	13 Nov 1973	9.250	1975
27.	Chemetron Corp.	02 Sep 1977	9.000	1994
28.	Microdot Inc.	16 Jan 1976	10.000	2000
29.	Mack Trucks	05 May 1967	5.125	1981

VITA

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